S. HRG. 106–161

YEAR 2000 AND OIL IMPORTS: CAN Y2K BRING BACK THE GAS LINES?

HEARING

BEFORE THE

SPECIAL COMMITTEE ON THE YEAR 2000 TECHNOLOGY PROBLEM UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

ON

OIL AND ITS AVAILABILITY

APRIL 22, 1999

Printed for the use of the Committee

Available via the World Wide Web: http://www.access.gpo.gov/congress/senate

U.S. GOVERNMENT PRINTING OFFICE
56-952 CC WASHINGTON : 1999
For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, DC 20402

SPECIAL COMMITTEE ON THE
YEAR 2000 TECHNOLOGY PROBLEM

[Created by S. Res. 208, 105th Cong., 2d Sess. (1998)]

ROBERT F. BENNETT, Utah, *Chairman*

JON KYL, Arizona
GORDON SMITH, Oregon
SUSAN M. COLLINS, Maine
TED STEVENS, Alaska, *Ex Officio*

CHRISTOPHER J. DODD, Connecticut,
Vice Chairman
JOHN EDWARDS, North Carolina
DANIEL PATRICK MOYNIHAN, New York
ROBERT C. BYRD, West Virginia, *Ex Officio*

ROBERT CRESANTI, *Staff Director*
T.M. (WILKE) GREEN, *Minority Staff Director*

CONTENTS

STATEMENT BY COMMITTEE MEMBERS

CHRONOLOGICAL ORDER OF WITNESSES

ALPHABETICAL LISTING AND MATERIAL SUBMITTED

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

YEAR 2000 AND OIL IMPORTS: WILL Y2K BRING BACK GAS LINES?

THURSDAY, APRIL 22, 1999

U.S. SENATE,
SPECIAL COMMITTEE ON THE YEAR 2000
TECHNOLOGY PROBLEM,
Washington, DC.

The committee met, pursuant to notice, at 9:35 a.m., in room SD–538, Dirksen Senate Office Building, Hon. Robert F. Bennett (chairman of the committee), presiding.

Present: Senators Bennett and Stevens.

OPENING STATEMENT OF HON. ROBERT F. BENNETT, A U.S. SENATOR FROM UTAH, CHAIRMAN, SPECIAL COMMITTEE ON THE YEAR 2000 TECHNOLOGY PROBLEM

Chairman BENNETT. Good morning. The committee will come to order. Good morning and welcome to a hearing on Y2K and the oil industry. When the special committee was first established, we laid out as our first priority an examination of the energy sector, primarily focusing on power, but recognizing that power in many instances comes from the oil industry. So it's appropriate that we follow up today with a hearing on oil and its availability.

We focused in our first hearing on the fact that all utilities are highly dependant on services and supplies that are upstreamed from the actual manufacturer of power, and consider for a moment what else is affected by oil. Automobiles, of course, come to mind first. Our ability to get from Point A to Point B and the price of gas affect how people perceive the health of the economy, and in return, the perception of the economy often affects the economy itself.

Americans have recently seen a sharp increase in gasoline prices resulting from a unified reduction agreement among gasoline manufacturers. This is not direct cause and effect, but it is something for us to pause and think on. In March, OPEC announced that it would cut production by 2.104 million barrels of oil a day. That sounds like an awful lot, and then you put it into the total perspective. That is a reduction of 2.6 percent. Well, with the reduction announced of 2.6 percent in the supply, literally overnight there was a 20 percent increase in gasoline prices, prices surging even by 20 to 40 cents a gallon.

Clearly, a minimal reduction in world supply can have a disproportionate impact on price, and a reduction in the amount of available oil resulting from Y2K-related mishaps poses a serious and a potential problem very much worth investigating, and that

is one of the reasons for the hearing this morning. When the price of gas increases, everyone is affected, whether you happen to drive a car or not. The truckers all let me hear from them whenever there is a conversation about an increase in gas tax and the implications of that and the ripple effect throughout the entire economy.

The cost is not the only concern. Availability is an even greater concern. The gas lines of the 1970's are still vividly in the minds of some of the older Americans. Some of the teenagers may not remember that, but their parents do. A gas line in and of itself is a symbol of economic difficulty, and no one wants to revisit that event. The panic over the possibility of shortage can create a gas line in and of itself, even if there is no shortage, another reason for us to have a hearing to examine exactly what will happen and help get the word out.

Now, inherent to the availability of oil is the readiness of transportation systems and ports, because more than half the oil that we use in this country now is imported. It continues to be the chief priority of this committee to receive accurate and comprehensive information regarding Y2K readiness in all sectors of the infrastructure, but getting accurate and comprehensive information from other countries, those countries that export oil to us, presents a much more difficult dilemma.

When we look for information on the status of transportation systems of countries that ship petroleum products, we are deeply concerned about what we have been able to find out so far, but the information has been extremely limited, and we have to make assumptions. If we make overly optimistic assumptions, we will be adding to a sense of complacency that can hurt us. If we make overly pessimistic assumptions, then we can add to the panic.

Now, a reliable, anonymous—we think it's reliable—report the committee has received indicates there is an apparent lack of information characterizing the confidence of key nations about the Y2K status of their shipping services, for example the top three oil import sources: Canada, Venezuela, and Saudi Arabia. Information on the transportation systems of these three countries has been extremely limited. In fact, only Canada appears to have at least some information that we are able to get a hold of. There is virtually nothing known that we can depend on to make confident extrapolations with respect to the status of the other two countries.

Additionally, should the oil exporting countries be able to produce and transport oil, will port readiness be a factor? Will tankers be able to dock and deliver their product? And will the computers that handle the customs papers be ready to print things out? We have long since gone beyond the stage of press hard, you are making four copies, when it comes to the paper work in a company's international shipments.

All right. While these issues are extremely complicated, they cannot be simplified by assuming that an oil shortage due to Y2K problems in one place will be offset by production and distribution increases in another. The United States is the largest producer of petroleum products. Saudi Arabia remains the No. 1 source of crude, but there are literally dozens of other countries that participate in this global trade business. It is a very difficult task for us to sort all of this out, and that is why we are having this hearing,

and we are looking forward to the witnesses who will help us sort it out.

Now, I notice there are a number of younger people in the audience today. This is Take Your Daughter to Work Day, and some of the young men in homes have said what about me, and so it has become Take Your Children to Work Day, and we welcome these children and hope that it is not so boring that they do not get something worthwhile out of it. In the spirit of that, I will note for the record that John Stephenson, who is the Deputy Staff Director of this committee and who helped organize today's hearing, is not with us because he and his wife are at home with the newest member of their family, a 6 pound, 15 ounce baby boy who is probably a little young to take to work in this kind of an atmosphere. But we send our congratulations to John and Penny, as well as Eric's older sister Kaity, and welcome Eric to the Senate family, even if his father is only on detail.

Now, we are fortunate to have a distinguished group of witnesses with us today, able to discuss the aspects that I have talked about in my opening statement, and our first panel has been assembled to give us a broad picture of the industry in an international framework. The second panel will focus much more closely on specific facets of that. We have Robert Kripowicz, Principal Deputy Assistant Secretary for Fossil Energy, with the Department of Energy. Mr. Secretary, we are delighted to have you with us.

We have Ambassador William Ramsay, who is the Director of the Office of Non-Member Countries International Energy Association, who rearranged his schedule so that he could be with us. Sir, we are grateful for that. Mr. Red Cavaney, who is President of the American Petroleum Institute, which means he is always ready in Washington with an opinion and some information for us. That is what trade associations are for.

So we will proceed in that order with this first panel, and again, gentlemen, our thanks to you for being here this morning.

Mr. Kripowicz.

STATEMENT OF ROBERT S. KRIPOWICZ, PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR FOSSIL ENERGY, DEPARTMENT OF ENERGY

Mr. KRIPOWICZ. Thank you, Mr. Chairman. The Department of Energy has been addressing Year 2000 computer concerns on two fronts: One, we have been working hard to ensure that all of our internal mission-critical systems are Y2K compliant, and I am pleased to report that as of the end of March, 98 percent of these systems were ready to handle the Y2K changeover, and this includes all of the mission critical systems of our power administrations and the Strategic Petroleum Reserve.

Two, and more relevant to the hearing today, we are working with the President's Council on Year 2000 Conversion to ensure that the energy industry is also ready. Initially, DOE was assigned responsibility for the electric power sector, and the Federal Energy Regulatory Commission was assigned responsibility for the international oil and gas sector. Last month, DOE and FERC mutually agreed to transfer lead responsibility for international oil Y2K preparedness to DOE.

We believe the most valuable role we can play in addressing the international aspects of this issue is to raise the level of awareness of the global oil industry and within major oil producing nations, and we have worked hard to do this. Often, at our initiative, Y2K issues have been placed on the agendas of international energy organizations and multilateral energy forums, including the International Energy Agency, the Asia-Pacific Economic Cooperation, or APEC Energy Working Group, and the Steering Committee of the Western Hemisphere Energy Initiative. We also have extensive bilateral policy discussions with major oil producing nations, and we have used these opportunities to call attention to Y2K.

As you will hear, the International Energy Agency is playing a central role in many of the global efforts to address Y2K, and the Department of Energy, along with the Government of Japan and others, has made voluntary contributions to organize three regional seminars that deal specifically with ways the international oil industry can ensure Year 2000 compliance. The first of these seminars was held in Caracas, Venezuela on March 11th and 12th, and the second in Singapore on the 25th and 26th of March. The third will be conducted in Abu Dhabi in United Emirates on May 4th and 5th.

To date, our discussions and information gathering have given us a degree of cautious optimism. The four largest suppliers of imported oil to the U.S., Venezuela, Canada, Saudi Arabia, and Mexico, expect their petroleum sectors to be fully prepared by the end of the year or before. Kuwait, Norway, and the United Kingdom, likewise, expect to be fully compliant before the year is out.

Where our information is less complete, in countries like Nigeria and Angola, multinational oil companies operating in these areas are taking steps to counter any Y2K problems and develop contingency plans. We are seeing the active participation by petroleum associations from many countries and several of the largest state-owned companies in API's International Y2K Work Group and in the International Oil Coordination Council within the Administration. Where there are gaps in our knowledge, Mr. Chairman, is more in the service areas that support the overseas oil industry, telecommunications, electric power, ports and shipping, and security systems.

Another reason for our cautious optimism is that global crude oil production and distribution systems have shown remarkable flexibility in the past. Accidents, weather, worker strikes, natural disasters, and other disruptions, including war, have all been encountered over the years, and the global oil market has adapted. Moreover, today there is also flexibility in the form of some spare crude oil production capacity in several countries that could be brought on to compensate for any shortfall.

Finally, there are commercial and strategic stockpiles of crude oil. In the United States, we have the Strategic Petroleum Reserve. This emergency oil inventory is our insurance policy against oil supply disruptions. Its inventory currently stands at 561 million barrels, but I might point out that this week we began receiving the first of nearly 28 million additional barrels of royalty oil that will be transferred to the reserve from offshore leases over the next several months. The reserve is Y2K compliant, and it would be ca-

pable within literally a few days of responding to a Presidential directive to supply crude oil to the market.

In short, Mr. Chairman, at this point we would urge prudency and planning, but certainly not panic. We will continue to monitor the situation closely, and we will be prepared to take appropriate actions as necessary, both before and at the point where we transition into the new century.

And that concludes my opening statement.

[The prepared statement of Mr. Kripowicz can be found in the appendix.]

Chairman BENNETT. Thank you very much. Ambassador Ramsay.

STATEMENT OF WILLIAM C. RAMSAY, DIRECTOR OF THE OFFICE OF NON-MEMBER COUNTRIES, INTERNATIONAL ENERGY ASSOCIATION

Mr. RAMSAY. Thank you, Mr. Chairman. Thank you for the opportunity to speak before the committee about Y2K and the international oil industry.

The Paris-based International Energy Agency is an intergovernmental body within the Organization for Economic Cooperation and Development. It carries out a comprehensive energy program of energy security and policy coordination amongst its 24 member countries, which include the U.S., Canada, Japan, and countries of the European Union. As you have just heard, the Department of Energy encouraged the IEA's increased effort on Y2K, both substantially, and more importantly, financially, and the Government of Japan contributed as well.

The IEA Year 2000 project in the oil sector has two main components: awareness raising and information gathering. The IEA is seeking to raise Y2K awareness among large state and private oil companies beyond the majors by organizing a series of seminars in several of the world's most important oil producing and refining regions. The seminars are targeted on Year 2000 coordinators and other officials from governments, oil companies, and the infrastructure providers in which the industry depends, such as electricity, pipelines, shipping, ports. Both remediation and contingency planning are covered, though there is an increasing emphasis on the latter.

By raising the awareness and providing a forum for the exchange of information, the IEA hopes to prevent at least some of the oil market bottlenecks related to Y2K. The seminar you heard about in Venezuela was cosponsored by the Venezuelan state oil company, PDVSA; the seminar in the Asia-Pacific by ASCOPE, the ASEAN organization of state oil companies; and in the Middle East, the Emirates Center for Strategic Studies and Research is helping us on that seminar. We are examining the possibility of holding a fourth seminar for eastern Europe and the former Soviet Union.

The second aspect of the IEA's project is information gathering and source identification, where our objective is to be in a position to advise our member governments what action, if any, elective or individual, they should take in the possible threat posed by the Year 2000 problem. In order to draw conclusions about possible Y2K effects, we have been trying to develop an aggregate picture

of the situation. Companies have a tendency to be focused mostly on their own micro-situation, and to the extent they look beyond this, it is generally only to suppliers and infrastructure providers in which they directly depend; however it is the aggregate result that will affect the oil market.

Drawing the macro picture requires piecing together the various micro pictures along the supply chain and across companies and regions. In doing this, we have found that many of our target companies are reluctant to share a lot of meaningful corporate information because of concern about legal and commercial implications of doing so or about their national image of reliability. Nevertheless, after two seminars and discussions with various participants in the oil industry and its support industries, we have come to some preliminary conclusions which we plan to refine over the next few months.

As in other industries, Y2K is not just an IT problem. It is less of a computer problem than one of microchips embedded in industrial equipment used for production, transportation, monitoring, and control; and since there are so many chips, an oil platform may contain as many as 10,000, companies have to make a business decision on how much effort to put into remediation and then to prioritize their search and replacement activities based on the criticality of the systems to the supply chain. This means Y2K is a management problem.

The good news is that after exhaustive testing, a number of oil companies say they have found fewer problems at critical points than they expected. Fortunately, less advanced companies can learn from the experience of companies that are further ahead. In particular, the API, which maintains a data base of equipment, its members have found Y2K compliant and non-compliant is being made available. We would encourage the API in its recent efforts to provide this data base on a more general basis beyond API members if they can. Even if companies do not have the time or resources to replace many of the defective components, they can at least have a better idea where the problems are likely to occur, facilitating their own contingency planning.

Low oil prices have been a particular burden for oil companies up until recently. Although we do not have evidence that this has caused firms to cut Y2K budgets, there is reason to believe there will be pressure to do so. As a general rule, the state oil companies, especially those in developing countries, probably lag the majors in addressing the problem. However, the largest state oil companies which represent the supply most important to the United States started relatively earlier and appeared to be more advanced. Contacts with Saudi Arabia, Saudi Aramco, and PDVSA in particular have led us to believe that these key suppliers to the U.S. market take their preparations quite seriously.

Obviously, oil producing countries rely so heavily on oil for their national revenue that they have a considerable incentive to look after their industry. Most oil companies probably have a fair chance of handling the major Y2K problems in their own organizations. This is because oil companies are used to contingency plans, especially in the Third World. Moreover, the less advanced state-

owned oil companies are less dependent upon technology prone to Year 2000 problems.

Similar to the situation in other industries, a greater threat to the oil industry is breakdowns in infrastructure outside the company's control, for example in electricity grids, telecommunications, and shipping. Such service infrastructure risks are probably most pronounced in less developed countries. There is also some concern about the large amount of outsourcing for various services. Many oil service companies are small or medium sized and are more likely to lag large companies in their Y2K preparations.

Oil companies have learned from Y2K exercises that a few minor glitches can compound to create bottlenecks, and that which starts as a minor Y2K glitch can cascade into conventional failures, especially if several such glitches occur simultaneously. Flexibility and contingency plans will be crucial, and this is probably an area where everybody can do more.

The duration of any overall disturbance is unclear, but the oil industry does not operate in real time, and therefore has some margin to bring things back to speed. There is generally a large amount of oil in storage en route, and there is currently a fair amount of surge capacity among producers.

The oil market effect of Y2K is uncertain, especially since Y2K effects on the world economy could actually lower energy demand, but the oil market responds to expectations of supply and demand, meaning that any nervousness in oil markets could lead to an increase in demand in the run up to the Year 2000 because of stock building at all levels. It is too early to speculate on what, if anything, IEA might do collectively to calm markets or respond to supply disruptions. Our concern is that unless carefully orchestrated, any such efforts can just as easily have the opposite effect on market attitudes if our preparations are read as the clear indication that there is a serious problem, perhaps perversely stimulating customer disquiet. It may well be that national level public information would be more effective.

In any case, ministers of energy from the 24 member countries of the IEA will address Y2K issues at their biannual meeting in May in Paris. Our efforts over the next few weeks will be directed to identifying how we might structure the fourth seminar to address the various operating entities in the oil sector of Eastern Europe and the former Soviet Union. As our efforts progress in looking for the weakest links in the oil supply chain, we are increasingly alert to non-oil real-time phenomena which could seriously impede energy delivery systems such as electricity and gas. More of these considerations will figure in our fourth seminar.

Finally, if I might just direct your attention to the IEA's web site which contains pages on the Year 2000 problem. These provide information on our seminars, IEA work on the Year 2000 relating to the oil industry, and hyper-links to many relevant web sites dealing with this issue. The web site URL is available in the written testimony.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Ramsay can be found in the appendix.]

Chairman BENNETT. Thank you very much, Mr. Ambassador. We appreciate your being here.

Mr. Cavaney.

STATEMENT OF RED CAVANEY, PRESIDENT, AMERICAN PETROLEUM INSTITUTE

Mr. CAVANEY. Mr. Chairman, I want to begin by thanking the committee for holding this hearing. An informed consumer benefits us all.

I am president and CEO of the American Petroleum Institute, representing over 400 member companies involved in every aspect of the oil and natural gas industry. I appreciate the opportunity to testify on our industry's preparations for the Year 2000 and ask that the written statement I have submitted be made part of the permanent record.

Chairman BENNETT. Without objection, it will be.

Mr. CAVANEY. The oil and gas industry is working intensively to prepare for the Year 2000 and feels it will be ready to continue supplying our customers throughout the year-end changeover. Our industry has long anticipated the challenge of Year 2000 computer conversions and has been working hard on this problem for more than 5 years. Our Year 2000 task force is coordinating the industry's efforts in sharing technical information among oil and gas companies and with other industries. We are a leading participant on the President's Council on Year 2000 Conversion, and we are working with the DOE and the Federal Energy Regulatory Commission as well.

In January, API and the Natural Gas Council surveyed the industry's Y2K readiness. The 1,000 companies that responded supply 88 percent of the oil and natural gas our nation consumes. This is what we learned: Of the overwhelming majority of companies responding, 94 percent said they would be Y2K ready by September 30, 1999; embedded chips are not the problem earlier anticipated; and 97 percent of the companies said they expect to have their Y2K contingency plans in place and tested before October 1, 1999.

With that said, let me turn to the source of much of our supply. The U.S. is largly self-sufficient in natural gas. In 1998, our nation imported less than 14 percent of the natural gas we consumed. Canada was by far the leading foreign supplier. Oil, however, is another matter. Last year the Nation imported 56 percent of the crude oil consumed in the United States. The Department of Energy has indicated that the four largest exporters to the United States, Venezuela, Canada, Saudi Arabia, and Mexico, are preparing their computers for Y2K and expect all critical systems to be Y2K compliant by the end of 1999.

I have here a letter from the Venezuelan national oil company, PDVSA, recounting their readiness plans, and I would like to also submit that for the record.

Chairman BENNETT. It will be included.

[The letter referred to can be found in the appendix.]

Mr. CAVANEY. The United Kingdom, Kuwait, and Norway also expect to be Y2K compliant, and API members indicate that their operating divisions abroad are on track to be Y2K ready. Even if some foreign suppliers experience Y2K problems, imports would

not stop instantly. There is always some crude oil en route to the U.S. via tankers, some of which can take up to 5 weeks to cover the seas. If foreign suppliers have production problems, we will know the day that it happens, giving the industry time to move supplies around to compensate for any lost production.

In addition, the Federal Government owns and operates, as mentioned earlier, the Strategic Petroleum Reserve, an essential buffer in the event of a serious interruption in any foreign oil supplies. Although the industry has never experienced a challenge quite like Y2K, there have been other disruptions to the flow of oil, and there is a record of the industry's successful responses.

The industry's flexibility enabled it to continue serving its customers during the Gulf of Mexico hurricanes of 1998. We had gasoline supply difficulties during the summer of 1987 and during the Persian Gulf War, just to cite a few examples. At the end of the day, the critical question is can we give you a 100 percent guarantee that absolutely no problems will occur and consumers, without exception, will find what they want, when they want it. No one can make such a blanket assurance because we live in an interdependent world, but we can guarantee that the domestic oil and natural gas industry is very well prepared to serve our customers in a timely manner and keep energizing our economy each and every day.

In conclusion, we are concerned, however, about misinformation on the impact on the Year 2000 conversion being promoted in the public domain. Some who may mean well but are uninformed are inviting unintended consequences in the marketplace when they recommend that consumers should take their money out of the bank or fill their gasoline tank or horde gasoline and groceries. Such changes in behavior could produce consequences that are totally apart from how well our industry or other industries are doing in their job of preparing for the future.

Congress can help by putting out current, factual information about industry preparedness to deal with Y2K and by avoiding any unnecessary constraints on the private sector. Congress can also use its oversight role to assure the Y2K readiness of the SPR, should it be needed.

We appreciate the opportunity to testify today and to update and enhance the public record on the oil and gas industry's preparations for the Year 2000. Thank you, Mr. Chairman.

[The prepared statement of Mr. Cavaney can be found in the appendix.]

Chairman BENNETT. Thank you very much. You have each heard each other's testimony, so I would like to make this a true panel, rather than asking a question of any one individual, and any comments each of you might have on the others' testimony would be welcome.

Let me start with this question for whomever wishes to respond. The information that you have given us here this morning is optimistic, and that is one of the reasons we held the hearing, so that you would have a platform to deal with the potential of panic, Mr. Cavaney, that you talked about. I must comment, one of the problems that we are uncovering is people deciding that they must stockpile flammable sources of energy in their own garage, and this

is a very dangerous thing to do. To put a lot of jerry cans of refined gasoline and pile them up your garage is probably not a prudent thing to do. You would be better off having a day or two of cold than run the risk of having your house blow up or burn up.

So it is very encouraging to hear these kinds of reports, however I have to ask this fundamental question that comes out of our experience in other areas, and that is are all of these reports self-reported? Is there any independent verification from an outside source that says yes, we are as ready, as some of the companies or countries are saying that we are? Does anyone wish to respond to that?

Mr. KRIPOWICZ. Mr. Chairman, I would like to say a couple of things. First of all, with regard to the other people's testimony, it is clear, you know, that we have been working very closely over the past period of time.

Chairman BENNETT. We will not accuse you of collusion.

Mr. KRIPOWICZ. Among all three organizations. So we are pretty much telling the same story, because we have been dealing with each other on a constant basis. If you would have asked us the same question last year, you would have definitely got a different answer because of the stage of the process and the amount of information. You would have gotten a different response from the Department of Energy on its own internal systems, and you did, as you remember.

Chairman BENNETT. Yes.

Mr. KRIPOWICZ. And the constant awareness has led to, I think, an increased effort by everybody. In terms of the question of self-reporting, from the Department of Energy's point of view, we only verify the systems that we have responsibility for. So we have to take the word of the self-reporters, and we follow up on this on a constant basis, and sometimes the word changes as they get further into the systems, but basically we have to rely on the organizations doing the reporting because we have no ability to actually go in and do verification.

Mr. RAMSAY. I would agree with everything that was just said there. The self-reporting does get checked a bit because a lot of the majors are operating with a lot of the self-reporters out there beyond the majors, and multiple majors are working with the same state oil company. So they get tested and they get checked. Everyone is worried upstream about whether they can count on the integrity of their suppliers or their joint venture partners. So there is a fair amount of internal cross-checking going on so that truly inconsistent stories would begin, I think, to emerge.

I think the optimism that you heard, Mr. Chairman is about a physical barrel optimism that we can handle the—that the trade can handle what is going on in the market and that the barrels will be available for consumption. But there is a lot beyond that that should not lead to complacence. I do not think there has been enough discussion amongst the sectors. There has been too much stove pipe conformity being worked on. I do not think that there has been quite enough contingency planning among sectors so that people can think through what problems they might have to deal with and how they might fix them, and I think companies have a lot of interest in going further than just making sure the barrels

are available, because there is a question of asset integrity—if equipment fails or equipment is damaged, this is very expensive—for corporate integrity, safety, environmental issues.

So there is quite a bit working on companies to get this right beyond getting the barrels to the marketplace. So, yes, a bit of cautious optimism but still some warnings that there is a lot more work to be done, and we will not really have finished with that work until the first week of January.

Chairman BENNETT. Yes, sir?

Mr. CAVANEY. Mr. Chairman, I would like to just add a couple of points, and certainly I am in agreement with the comments from my two colleagues. First of all, it was mentioned in some of the earlier testimony, API and its member companies, over 50 of whom are active in reporting this various data, have made this available on the web. So it is fully available to other companies, national oil companies, other countries and, anybody that's interested. So there is an opportunity both to have this information checked by those who are working with the companies but are vendors outside the company, as well as by other people who would care to take a look at it.

At the end of the day, our companies view very importantly their franchise to serve their customers, and that as much as anything else is what is driving them to ensure that they try to move toward a zero defect environment.

We, as I mentioned in my testimony, are interdependent. We do rely on the electric power industry, and we do rely on the telecommunications industry in order to make some of our operations work successfully. We are already fully engaged in industry-to-industry discussions on contingency plans, on readiness to ensure that we have those systems well understood as we move toward the end of the year.

Chairman BENNETT. Well, you and Ambassador Ramsay anticipated my next question, because you are dependant on other systems. We have a chart that we use, and I will not expect you to try to read it at that distance. I have a little trouble reading it at this distance. But you see the different colors, and the colors are red, yellow, and green, red being a country. Down this axis is the country, and across here is the function. So you can take one country and go across, and red is probably no chance that they are going to be ready; yellow, cautious optimism; and green, they are on top of it, and it is going to work.

Now, you are sitting there saying there is a lot of black on the chart, Senator. The black simply means we do not know, and that is the area that gives me concern. This particular column is the energy column, and presumably that would mean power available in that country to run dock facilities or other supporting facilities. If the power goes out, it does not matter whether the computers are all Y2K compliant.

And there are some countries on here that are fairly important where we have black. That is we just do not know. The ones where we have red presumably are not major sources of energy to this country, but they are major sources to other countries and could upset the world equilibrium, the world market equilibrium, and

your point, Ambassador Ramsay, that there has been a lot of stovepiping, but we need some horizontal thought.

Now, at the risk of angering the appropriate Ambassadors, two countries that are listed on here as red in the energy area are Russia and China. We do not get a lot of oil from Russia and China, but there are countries around the world that do. Let us suppose for the sake of the scenario that there is a complete breakdown in energy supplies available, whether it is oil or natural gas, from Russia and China. How would that hole in the world supply affect us? How would it affect world prices? And how would it affect world stability? I am asking you global-type questions here that you may want to be specific about, but this committee lives in the world of unfair questions. So let me throw that out and get your responses and your reactions.

Yes, sir.

Mr. CAVANEY. Mr. Chairman, I would comment on a remark you made when you gave your opening statement. We are in a time right now where there are a number of producer nations who are producing their crude oil at less than full capacity, and so I think it is safe to say, given the fact that oil travels in a global market, that were there shortages in certain areas, as you characterize, there is available excess capacity to produce more oil and deliver it to those markets, because obviously there is going to be some incentive to be able to continue serving those markets.

So as a result of this reduction in OPEC and the cooperating countries, we do have this opportunity to have a little bit of a contingency there that I think could serve us well were one of these things to materialize.

Chairman BENNETT. Ambassador Ramsay, let us talk about natural gas in Europe. Does not a fairly large amount of that come from Russia, and what kind of a problem would that create?

Mr. RAMSAY. There is a lot of natural gas supplied by Russia into western European systems. I think Germany is 35 or 40 percent dependant on Russian gas, and we have heard from gas companies that they are making every effort to be Y2K compliant and the gas companies' history of supply has been impeccable. Whenever there is a problem, those problems are typically absorbed internally. We have made an effort to talk with——

Chairman BENNETT. Now, do not go by that quite so fast. Absorbed internally. Do you mean if there is an inability to produce 100 percent delivery, the Russians are the ones who take the shorts, and they pass everything else on to the western Europeans to fulfill their contracts? Is that a fair summary of what you just said?

Mr. RAMSAY. That is a fair summary.

Chairman BENNETT. OK. Thank you.

Mr. RAMSAY. We have talked to a number of the gas transporters in Europe, and a great deal of work is going on. We have talked to customers about their sense of reliance on these gas supplies. We think more can be done in that regard, that a little bit closer inspection of what might be the implications of a pressure shortfall somewhere in the system, perhaps transit in Ukraine or Belorussia, and believe that that is work that companies are working on, but companies can work on that a bit more apparently so that

populations can be comfortable. That is an area that we will focus on in the next months.

But to go back to a bit more of what you were suggesting earlier on, remember that in places like the Gulf of Guinea and Campos Basin in Brazil, Saudi Arabia and other places, the oil industry is not at the centers of population. It tends to be off wherever the deposits are found, Nigeria and so forth, and those producing entities have their own power generation capacity. They typically will have their own satellite nets. They will be on infrastructures that are within their own competence, so that the support infrastructures in many of those places are inside the stove pipe. That can be somewhat comforting. That puts a broader responsibility on those producing entities, but there is some hopes that they have been attentive to that.

China, as you know, sir, for the moment, is a net importer, so that if China had a problem in their internal energy supply systems, that would be an internal Chinese issue, although problems inside China are never purely internal.

Chairman BENNETT. That is right.

Mr. RAMSAY. And the same thing could be said about a number of other countries. If electricity grids go down, these will be domestic issues that they will need to worry about, conceivably beyond just energy concerns, but should not cascade out into world markets. The observation you made earlier about the interdependence of the world is certainly a right one. Any supply problems anywhere causing a spike in prices is a problem everywhere. This market acts as one.

So it is best that we maintain our focus on all these places in the world, even if we are cautiously optimistic.

Chairman BENNETT. Let us talk about the readiness of maritime shipping. You touched on that briefly. We have talked about ports and their ability to load and offload tankers full of oil, but has any assessment been made about the supertankers and how they will operate and how reliable—well, reliable is not the word—how vulnerable they are to a Y2K problem?

Yes, sir.

Mr. CAVANEY. Mr. Chairman, you will hear from the next panel in great detail—one of the members companies of API will be testifying on that—but I would say when we look at tankers themselves, the systems that they have, all have backups, manual backups to them. So the concern that even though these are leased ships in many cases, while they have been certified and checked out, there is even more and more redundancy in the system to ensure that those supplies can continue flowing in that regard.

So it is very proper to look at both ports of debarkation and ports of call, but also as well as have some confidence that the ships themselves will be able to navigate the waters and deliver their product where needed.

Chairman BENNETT. Well, you mentioned in your statement that the embedded chip problem has turned out not to be as serious as we thought when we first began these hearings, and that, of course, is a very important aspect of this. One of the things that terrified us when the committee was formed was the estimate that two to 3 percent failure on embedded chips would occur. If you

have got 10,000 chips embedded in an oil platform, that means 200 of them fail, 200 to 300 of them fail, and that would be enough to shut the platform down.

Now we are thinking that it is more like two or three, that it is two-tenths of 1 percent instead of 2 percent. So that is an encouraging factor, and now you tell us that there is a manual backup.

Mr. CAVANEY. In the case of tankers, yes.

Chairman BENNETT. That is a further reassurance.

Mr. Kripowicz, you wanted to comment?

Mr. KRIPOWICZ. With regard to the various areas that support the oil industry such as tankers, electricity, and other support industries, the President's Council has recently set up a Y2K international working group that cuts across lines. We have talked about stovepiping here, but a committee—a working group has been set up by the council to start looking at these things across areas just as you were talking about where that has not been done in the past.

So I would believe that in the next few months, we will have a much better assessment of how the interaction of the various sectors affect each other. That working group has just been set up within the past couple of months.

Mr. RAMSAY. Mr. Chairman, on the issue of shipping, we have had the benefit of Admiral Naccara coming to our seminars to talk about this, at least in Caracas, but we watch this one, again, as another of those cross-fertilization opportunities that we would not want to miss, because the kinds of choke points around the world that could be difficult for navigation are important to the oil. I have a couple of them written down here: the Bab el Mahdab at the bottom of the Red Sea, 3.3 million barrels a day; the Bosphorus, 1.4; the Straits of Hormuz, 14; the Straits of Malacca, 8.2; the Suez, 3.1. These are million barrels a day. So they are pretty important passages and some of them are very difficult. The Bosporus, in particular, is a dangerous strait, so that the IMO and other international organizations are beginning to cross the stovepipes to make sure that there is good discussion, and I am sure we will hear about that later.

Chairman BENNETT. Well, just to illustrate the seriousness of what you have just said, the staff handed me a copy of the Year 2000 problem in the oil industry from the international energy agency with respect to pipelines and again, the importance of external systems. Let me just read this to you and have it be part of the record. It says:

The vulnerable nature of pipeline systems to peripheral communication and control systems was recently highlighted in Iraq. In February 1999, a missile hit a repeater station on the Kirkuk to Ceyhan oil pipeline. Although the pipeline itself was not damaged, the loss of the communication center cut the flow of oil between Iraq and Turkey.

The pipeline's control centers at Kirkuk and Ceyhan terminals rely on data from repeater stations to operate valves, pressure and temperature controls along various stages of the pipeline. Without data, these control centers were effectively blind, losing operational control and ordering system shutdown. An attempt was made to operate the line manually but was aborted as operationally

unfeasible, thus highlighting the vulnerability of modern pipeline systems to computerized data and communication links. Repairs took nearly 1 week to complete.

So while nobody is going to be shooting missiles, we hope, a communications capability could become blind, and in this case, even though physically the ability to operate the thing manually was there, it is rendered operationally unfeasible without the data. It was interrupted for a week.

Now, if I hear your combined testimony, interruption for a week at one center, even if it is a fairly major center, is not a crippling problem because there are other capabilities as well as the ability to go somewhere else and fill the gap. It is clearly there, but if this were to happen in multiple places, we could have problems.

Mr. RAMSAY. That, sir, is a valid point. This particular case, the reason that a lot of pressure was not put on the technical fixes on telecommunications was because of the squishiness that we have been talking about in the oil sector. There was so much storage at Ceyhan at the time that there was no interference of loading vessels out and so no incentive to use extraordinary costly measures to fix the telecommunications tower. So there was that flexibility in play, again, in how they chose to repair it. But as you say, a multiple of these at the same time is not the same.

Chairman BENNETT. OK. Let us talk about one last issue before we go to the next panel, and that is refining capacity. We have been talking about crude supplies and the ability to move them around. Is there an equal flexibility in the capacity to refine the oil? Prices in California are in the news right now, more because of refinery capability than crude oil supplies.

Does anyone have a comment on what would happen if we were to have interruptions in some refineries? Yes, Mr. Cavaney.

Mr. CAVANEY. Mr. Chairman, I will address the first part which is the point of interdependence that I mentioned to you. We are very much reliant on the electric power grid and on telecommunications to keep those refineries operating, much more so than was mentioned earlier in the upstream area where we are out in different parts of the world actually with our own power systems to support us separate from the national industry. We feel reasonably confident from the beginnings of the dialogs that we have had about our supplies of electric power and telecommunications and are going to continue working with them, you know, to that end.

We have been operating this past year at about 98 percent capacity. So there continues to remain some excess capacity if needed. For example, if one refinery for some reason or another, cannot operate, others can step in. In the United States——

Chairman BENNETT. You say we have. Is that worldwide?

Mr. CAVANEY. In the U.S.

Chairman BENNETT. So in the U.S. there is excess refinery capacity?

Mr. CAVANEY. A small amount, yes, there is.

Chairman BENNETT. I see.

Mr. CAVANEY. But more importantly, there is a tremendous infrastructure of pipelines and the like to move crude oil products around, finished products to the various areas where they need to be taken.

You mentioned California. California is a unique situation, and it would not be accurate to extrapolate the circumstances that California is undergoing at the present time to a national scale, and the reason why is because they have a unique gasoline, and because of its high cost of production, only refineries in California produce that gasoline. The rest of the country, basically because of this infrastructure, because of the flexibility, is able to move product around and fill the gap.

So we are quite confident that the kind of consternation that people in California are experiencing from some unplanned outages are not going to have that scale of concern nationally.

Chairman BENNETT. I see. Thank you. I had not realized that, but as you say, yes, California has its own world as far as these kinds of issues are concerned.

Thank you all. We appreciate your appearance here, and this has been a very useful panel.

We will be submitting additional questions in writing to all of you. We appreciate your attention.

[The questions and responses referred to can be found in the appendix.]

Chairman BENNETT. We will now move to the second panel. Our second panel will address the maritime transport of oil, including both tanker and port operations, pipelines, and finally where the public meets the industry, the gasoline pumps. You, gentlemen, have heard the conversation in the first panel, so you have some sense of where it is we are going.

We have with us Rear Admiral George Naccara who is the Chief Information Officer of the United States Coast Guard; Mr. Bob Malone, who is President of the Alyeska Pipeline Service Company; and sir, as a result of your being here, we can anticipate an appearance by Senator Stevens at some point. I have three hearings I should be to this morning, all of them vital, and Senator Stevens is faced with the same. If he is unable to get here, we will understand, but the chances of his being here are higher than they would be otherwise. Captain Phillip Davies, who is the Area Operations Manager for Chevron Shipping Company; and Mr. Michael Ingle who is the Treasurer of the Service Station Dealers of America. So we thank you all.

We will start with you, Admiral.

STATEMENT OF REAR ADMIRAL GEORGE N. NACCARA, CIO, UNITED STATES COAST GUARD

Admiral NACCARA. Thank you, sir. Good morning, Mr. Chairman. As you said, I am George Naccara of the U.S. Coast Guard, and I have responsibility for the Coast Guard's Year 2000 project.

Your Coast Guard is working to ensure its information technology systems are prepared for the millennium, since the Y2K readiness of domestic ports will depend partly on the readiness of the Coast Guard to respond to disruptions. Our motto "Semper Paratus" means that we must ensure that we can deliver our marine safety, environmental protection, search and rescue, and maritime law enforcement services to the public. We are keenly interested in the Y2K readiness of the maritime industry we regulate. We have been alerting all segments of the Marine Transportation

System to the threat of Y2K. We are also busy assessing the Y2K readiness of domestic and international ships and ports.

To better understand the readiness of companies that transport, store, refine, and pump oil, we have engaged with them or their respective trade associations, sharing the podium at conferences with Chevron, API, and IEA. We know that well-established companies have robust Y2K projects in place. They have gone thorough contingency planning, and they expect to be ready for the millennium.

For example, I have been particularly impressed with presentations with Chevron on their Y2K project. However, while some trends in the industry appear favorable, it is very difficult in such a fragmented industry to assess whether progress is meeting projections and whether optimism is justified. Uncertainly remains, for example, as to the seriousness of the embedded chip problems on ships. At a recent IEA conference in Caracas, I heard very troubling assessments of other parts of the Central and South American infrastructure, such as power and telecommunications.

As Venezuela is the largest supplier of foreign oil to the United States, these concerns lead me to conclude that we must continue to push all stakeholders in the Marine Transportation System to continue contingency plans. I mentioned that the Coast Guard and others are taking measures to help prepare the industry for the Year 2000. Some of these measures include a Coast Guard Y2K awareness conference and industrial sessions on all three coasts, on the Great Lakes and the inland rivers, and distribution of over 50,000 Y2K brochures containing information, Web sites, and 800 info lines to all ships calling in U.S. ports.

I have attended numerous domestic and international speaking engagements and will continue to do so. In fact, I was to address the National Association of Waterfront Employees in Bermuda just this morning. This has been rescheduled.

Next, a Coast Guard study of the best Y2K readiness practices in the 48 major inland and coastal ports in the U.S.; these practices will be shared widely among all captains of the port and all transportation system stakeholders. The study includes a risk assessment matrix that can be used to assess one's own or a partner's Y2K readiness.

I gave a speech to 120 national Y2K coordinators and delegates at the United Nations in December 1998 in which I cited potential Y2K disruptions to the international oil transport industry. The Coast Guard was later asked by Mr. Koskinen and Ambassador Kamal of the United Nations to lead an international effort to address the Y2K readiness of the global Marine Transportation System. The result was a March meeting of 16 international marine trade associations at the International Maritime Organization, IMO, in London which we jointly sponsored with the United Kingdom Maritime and Coastguard Agency.

In preparation, representatives from nine of the trade associations met several times to draft a Year 2000 Code of Good Practice. After being modified by meeting attendees, including very essential contingency planning guidelines and a list of ship and port critical systems, the code was published immediately by IMO as Circular 2121. The Coast Guard and the IMO intend that the Code will become the basis for Y2K information exchange, assessment, risk

management, and enforcement policies by ships and ports worldwide.

On June 21st and 22nd, there will be another U.N. meeting of the national Y2K coordinators. Besides urging worldwide acceptance of this IMO circular as the basis for Y2K policy by port and flag states, the Coast Guard will distribute its own Y2K enforcement policy and port operations guidelines.

You have asked me to offer an assessment of areas around the world where Y2K problems may impede the study, production, and transport of oil. Clearly, others on that panel today are better qualified to address the issue of production.

Regarding transport, let me make two points, please. The Gardner Group and the Department of State have both published unclassified regional and economic sector assessments of international Y2K readiness. The studies permit some inferences as to regional Y2K impacts on the Marine Transportation System, with the caveat that the MTS is the global industry in which the readiness of MTS companies is not always the same as that of countries in which they do business.

I also want to stress that oil transport companies will be subject both to the uncertainty to embedded chip problems on ships and ports and to a range of potential disruptions of the interlinkages of the industry with supply chains and supporting infrastructures.

Despite these cautions, the Coast Guard is actively collecting data on the international readiness of the Marine Transportation System. We are partnering with the U.S. Transportation Command and other intelligence organizations to gather data on the Y2K readiness of over 50 key international ports and critical choke points. We hope to have considerable data analyzed by this summer, giving us a reasonable picture of global readiness in the Marine Transportation System.

I have been invited, also, to comment on actions the Congress or others should take to address Y2K issues impacting the importation of foreign oil. Certainly, it would seem prudent for Congress to join with all those concerned about fuel supplies in taking a message to the American public against hording petroleum products or topping off our tanks a day or two before the century change, as we all understand that kind of an act alone repeated nationwide could lead to shortages.

To assist the Coast Guard in its preparation for Y2K, I would also appeal for mindfulness regarding the amount of information being requested from us on a near-daily basis.

Thank you very much for this opportunity, Mr. Chairman.

[The prepared statement of Admiral Naccara can be found in the appendix.]

Chairman BENNETT. Thank you.

Mr. Malone, we have been joined by Senator Stevens, and we appreciate your presence here that brings his presence here; although I will say that Senator Stevens is a more active member of this committee than many others who do not have as heavy a burden as he carries, and we are delighted to have him.

Do you have any comments, sir?

STATEMENT OF HON. TED STEVENS, A U.S. SENATOR FROM ALASKA

Senator STEVENS. Well, I have come, as you say, because Bob Malone is a great friend, and I know he has traveled a long distance to be here today, and I am happy to see him here. The pipeline that he manages transports 20 percent of our nation's domestic supply of oil. It is very critical to the Nation, but also it is more critical to my state's economy, and I think that there is no question we are in difficulty.

I can remember the day when oil sold for $54 a barrel out of that pipeline, Bob, and now it is $11. If anyone does not understand that, the economics of one small state that depends heavily upon its revenue, you do not have to be a rocket scientist to understand how important this man's job is to us. So I am pleased to be here to hear him and appreciate you coming down.

Chairman BENNETT. Mr. Malone.

STATEMENT OF BOB MALONE, PRESIDENT, ALYESKA PIPELINE SERVICE COMPANY

Mr. MALONE. Chairman Bennett, Chairman Stevens, thank you for your presence. Good morning. As you said, my name is Bob Malone, and I am the president and chief executive officer of Alyeska Pipeline Service Company. I am honored to be here with you today to assure you that Alyeska Pipeline Service Company will be ready when the clock turns over to January 1, 2000, and also that the Trans Alaska Pipeline System is fully prepared to meet the challenges of the new millennium.

The west coast of the United States relies on North Slope crude for some 40 to 50 percent of their gasoline supply. We do not plan to let our neighbors down. Just by way of background, Alyeska is the operator of the 800-mile-long common carrier pipeline system that today transports 1.2 million barrels a day of Alaskan North Slope crude. We load an average of 42 tankers per month at the Valdez Marine Terminal. We provide oil spill prevention and response services to the tankers that are transiting Prince William Sound. Since 1977, we have transported approximately, as Senator Stevens said, 20 percent of the Nation's domestic crude oil production.

We have a comprehensive Y2K program, with a very simple and a clear objective, that is to ensure that oil continues to flow in a safe and environmentally responsible manner. We have elected to manage our program through an internal single point of contact. My vice president and chief information officer, Dave Laurence, who is here with me today, heads that program up. The structure that we put in place through Dave gives me the assurance that I need to know where we are, whether we are meeting the deadlines and any obstacles that are getting in the way.

We started our initial assessment and evaluation of the Y2K program on TAPS in 1996. We have used a triage process to categorize the systems in terms of both mission and business-critical functions. Those are the functions that we must be able to perform if we are going to operate TAPS safely and reliably at the start of the new year.

Today we are devoting our effort to finalizing remediation by the end of June. We have more than 90 percent of those mission-critical that will be completed by then, and we will only have two systems which, by design, will be finished up at the end of September. We also will have our business contingency planning complete, again by design, at the end of November. Our team consists of 70 people who are exclusively devoted to the Y2K issue. We share information with trade associations upstream and downstream of our pipeline and also with our owner companies.

Right now I estimate that final Y2K cost for the Trans Alaska Pipeline System will be in the area of $30 million. We decided early in the planning process that in order to ensure our success, we would follow a very straightforward, simple, industry standard methodology, that is first to assess the systems, remediate them or replace them, and have contingency planning in place.

Every system of the pipeline, the terminal, and our tanker escort system has been analyzed. We have looked at in excess of 110,000 devices which we have inventoried. Of those, approximately 27,000 required a detail assessment, and fortunately we found that only a small number, approximately 130, are going to require either remediation or replacement.

Our efforts have included everything from recoding of the software to address the double zero to changes in hardware, for example our security systems at four of our river crossings. Our efforts focused on completing our contingency planning. This planning is designed to minimize the risk in the event that we do experience Y2K failure in either our mission-critical or business-critical systems. There we are working in three major areas. The first is the focus on our operating assets; second, on a companywide operation; and then, of course, gaining mutual understanding and agreement with external stakeholders and third parties.

Our contingency plan will assure continuity in our operation and address any possible failures. For example, we may actually stage people along the pipeline where they will be able to manually operate key parts of our system. We're mobilizing our incident command team, which are the people that are ready to handle any emergencies in the event that we have a serious issue.

Mr. Chairman, in closing, I want to again state that Alyeska Pipeline has anticipated the problem, that we are remediating that problem, and that we are prepared, and we are ready to greet the new century, although we may be out in the weather rather than in the celebration.

Thank you .

[The prepared statement of Mr. Malone can be found in the appendix.]

Senator STEVENS. Mr. Chairman, I have to go back to my other hearing. Could I ask Bob a question?

Chairman BENNETT. Absolutely.

Senator STEVENS. Do you have any problems with any of the contractors which interface with the pipeline? Have you checked that to see whether there is any critical supply line that might be affected by Y2K?

Mr. MALONE. Chairman Stevens, yes, we have. We are working with all our suppliers and vendors and contractors in an assurance

process. To date, we have had no indication of any problem, but like everyone else, that is the most difficult part of the process at this point in time, which is working with those contractors and vendor suppliers to get that assurance, but to date, we have no indication that there will be a disruption.

Senator STEVENS. Is there any date prior to the end of the year that is critical to the Trans Alaska Pipeline System and Y2K?

Mr. MALONE. Yes, sir, there are. One that comes to mind immediately is 9–1–99. There is several dates that it is uncertain whether they will have an impact. We do not think so right now. We passed through a couple of those already, but the next one that I am aware of is 9–1–99.

Senator STEVENS. 9–9–99, I believe.

Mr. MALONE. 9–9. Sorry. 9–9–99.

Senator STEVENS. Are you telling us that you are going to have people out on the pipeline on December 31st at night to just be there to turn those valves in case something goes wrong?

Mr. MALONE. Yes, sir. In addition to our normal staffing levels, we will strategically place additional personnel to assist if needed. Right now, all of my vice presidents will be in one of our crisis centers. I will be there, and I have asked that most of our people be there, because the system can be operated, and we do have procedures for manual operation if necessary.

Senator STEVENS. That is a new experience. It will be sort of cold out there along that line, Bob.

Mr. MALONE. We have thought about that.

Senator STEVENS. Thank you very much, Mr. Chairman.

Chairman BENNETT. That is not an unusual thing. I was at a very large financial services company in New York, and they said they have booked 400 hotel rooms in downtown Manhattan for New Year's Eve, and I said that is going to be a pretty big party. And they said, Oh, no. We are going to fill those hotel rooms with our technical people, and they are there because they are within walking distance of our computers. We have canceled all New Year's Eve vacation time and leave in order to have the technical people available.

So they will be a little more comfortable than the folks in Alaska, but their holiday will have been interfered with the same way.

Senator STEVENS. Mr. Chairman, as Bob probably knows, I will be at the Alyeska resort. The ski lifts may not work, but my wood fireplace does. Thanks.

Chairman BENNETT. Thank you, Mr. Chairman. We appreciate you being here.

Captain Davies.

STATEMENT OF PHILLIP M. DAVIES, AREA OPERATIONS MANAGER, CHEVRON SHIPPING COMPANY

Mr. DAVIES. Good day, Mr. Chairman. Today I am also testifying on behalf of the American Petroleum Institute, as a significant number of API companies own, operate, or charter substantial tanker fleets. My own company, Chevron Shipping Company, operates 35 oil tankers on trade routes throughout the world, and we have a similar number of third-party ships under charter at any particular time.

My current responsibilities cover Chevron Shipping operations throughout the eastern and southeastern United States, and prior to this, I was a Y2K program manager for Chevron Shipping Company; and along with Admiral Naccara, attended several conferences around the world to raise awareness of Y2K in the marine community. I am happy to say that since these conferences, and particularly over the last several months, my opinion of the readiness of the oil shipping industry to meet the challenges of Y2K has changed considerably. We have generally prepared well, and we do not expect major problems at the turn of the millennium.

Through industry organizations such as API and the protection and indemnity clubs, ship classification societies, and the efforts of the U.S. Coast Guard and other international government organizations, there has been a sharing of data on an unprecedented scale. This information has been shared among major oil companies, independent tanker operators, and manufacturers. Various sites on the internet provide a wealth of information for those looking for compliance data for equipment fitted to their vessels.

Most companies involved in Y2K follow a phased approach that is similar to Alyeska that involves identifying equipment, determining the level of risk posed by the equipment, prioritizing systems based on the level of risk, and then developing contingency plans to deal with systems where compliance cannot reasonably be confirmed. This may include system replacement, alternative operational modes, or operational restrictions to ensure safe operations.

Equipment that is critical to the ship's operation tends to fall into four areas: proportion, steering, navigation/communication, and cargo. Most problems to date have been found in either control processes or in the communications equipment. Both of these areas employ a high degree of PC-based computer control which are generally easy to repair or replace.

Though the majority of the systems will be repaired or replaced in the lead-up to December 31, 1999, there will always be some potential for equipment to fail on board due to a Y2K malfunction. Within Chevron Shipping, vessel staff has developed contingency plans to address these failures and on-board routine is developed around them. In the case of Y2K, vessels will generally set watch routines to monitor equipment where the compliance is unknown. Seafarers are trained to deal with emergencies and contingencies and face adversities daily such as we can expect could arise from the Y2K problem. Seafarers are resourceful, and our ships are routinely designed with redundancies and manual workarounds for critical systems, and in the case of navigation, to utilize traditional methods.

In the marine oil transportation industry today, crude and products are transported in either oil company vessels on tonnage chartered on their behalf. A key role in this process is the inspection and vetting process which ensures that the vessel is in acceptable operating condition and is in compliance with applicable rules and regulations. In conjunction with this inspection, Chevron and other companies have been including vessel assessments and the owner/operator's commitment to Y2K compliance. This assessment includes appropriate equipment audits, necessary remediation, crew awareness on the existence of contingency plans.

In order to ensure continued supply, Chevron will only charter vessels that have shown a high level of compliance and have contingency plans in place. In addition, the U.S. Coast Guard is now including Y2K awareness in its on-board program. It further helps to focus the attention of owners and operators. Contingency planning is a key step in the Y2K process, and it takes two forms: preparing to operate the vessel with equipment that may fail and positioning the vessel such that efforts of Y2K failure either on board or on another vessel or facility will have minimal impact on the safety of the vessel, crew, environment, and cargo.

In order to minimize this risk within Chevron, we have taken various steps in our contingency planning: Step one would be to vessels where possible at sea or alongside in port, to suspend cargo operation during critical periods, and to increase awareness on board our vessels. We believe other companies are addressing contingency planning in a similar fashion.

In conclusion, the API and its member companies support the U.S. Coast Guard effort to develop national guidance to ensure key elements are addressed in local government contingency plan reports. Such guidance will provide such flexibility to allow individual ports to address their own specific needs. The U.S. Coast Guard, through the captains of the ports or district commanders, will take the lead in all major ports to convene stakeholder groups that can be charged with assessing port readiness.

Finally, due to leadership of the U.S. Coast Guard and the initiative of the API and its member companies, the level of awareness to have Y2K problem is such that the impact on the oil transportation infrastructure is expected to be minimal. Of course, Chevron and API members will continue to develop contingency plans with the U.S. Coast Guard and the oil transportation industry. The millennium rollover and its effects are not an emergency or surprise event. Our awareness of the problem has allowed us to plan well in advance, and the industry has the knowledge and tools to deal with any problems that may arise.

And I will be happy to answer your questions later.

[The prepared statement of Mr. Davies can be found in the appendix.]

Chairman BENNETT. Thank you very much. Mr. Ingle.

STATEMENT OF MICHAEL INGLE, TREASURER, SERVICE STATION DEALERS OF AMERICA

Mr. INGLE. Good morning.

Chairman BENNETT. Good morning.

Mr. INGLE. Mr. Chairman and members of the Senate Special Committee on the Year 2000 Technology Problem, my name is Michael J. Ingle, and I appreciate the opportunity to appear before you today to present the dealers community views and projections concerning gasoline availability on January 1st of the Year 2000. I have been a dealer for 30 years and currently operate two Amoco stations in Lanham and Bowie, Maryland. I am currently serving as the president of the Washington, Maryland, and Delaware service station association which represents over 1,000 small business members. I am also treasurer of the Service Station Dealers of America and Allied Trades. SSDA-AT is a 53-year-old national as-

sociation representing 22 state and regional associations with a total membership in excess of 20,000 small businesses in 38 states and individual members in all 50 states, the District of Columbia, Puerto Rico, and Guam.

Like the motoring public, we too are concerned about product availability and distribution on January 1, 2000. While dealers are dependent on their suppliers, we are in the front lines when consumers have concerns, and we are dependent on the sale of the motor fuel.

The petroleum industry has been actively addressing the Year 2000 challenges for the past several years. While individual service stations are at varying levels of compliance, the major petroleum companies have not identified any Y2K challenges that cannot be overcome. In particular, oil companies and their service stations have reached out to business partners, customers, and suppliers in order to develop compatible solutions that share best practices.

Throughout the country, seminars have been presented to the retailing end of the industry. We have one such meeting scheduled for May 20th in Annapolis, Maryland. Just as petroleum marketers are used to preparing contingency plans for supply disruptions and natural disasters, preparation for the arrival of the Year 2000 has been no different. Special contingency plans and backup suppliers and systems are in place to allow for uninterrupted service to consumers.

Based on recent industry surveys by the Natural Gas Council and the American Petroleum Institute, the petroleum industry as a whole is well on its way to being Y2K ready. In fact, almost all companies surveyed indicated that they will be Y2K ready by September 30, 1999.

The following are some commonly asked questions by the public regarding our industry and this issue:

Will service stations be open December 31, 1999 and January 1, 2000? Yes, depending upon the store's usual hours. The Year 2000 is not expected to be a factor in unscheduled store closings.

Will I be able to use my credit card at a service station during the Year 2000? Credit cards were one of the first Y2K issues widely recognized and publicized, therefore service stations along with the entire retail industry have been analyzing, replacing, and testing credit card systems to ensure the Year 2000 compliance. They have also been working closely with credit card companies in order to guarantee that business processes are not compromised with rollover to the new millennium. In isolated incidents, computers would have problems with some credit cards. The result would mean that some of these credit card's automated tasks would have to be done manually.

What are retailers doing to ensure that gasoline will be available and fuel pumps will be functioning in the Year 2000? Most service station lights, fuel pumps, and registers rely on electricity in order to work, thus service stations are working closely with the utility providers to ensure a smooth transition to the Year 2000. In particular, the electric utility industry is preparing for the new millennium in aiming for 100 percent reliability and electric power on January 1, 2000.

According to a North American Electric Reliability Council report, virtually all electric power systems in North America will be ready for the Year 2000 by the target date of June 30, 1999. Consumers can expect few, if any, shortages of petroleum-based fuels in the Year 2000.

Service stations are working to ensure reliable, uninterrupted service. Even if there are some isolated supply interruptions, the impact on consumers will be minimal as service stations generally have backup suppliers. So if these primary suppliers experiences Year 2000-related problems, service stations have additional suppliers that they can contact.

Should I be stockpiling gasoline in the preparation for the Year 2000? There is absolutely no reason to stockpile gasoline in anticipation of the Year 2000. The petroleum industry is not anticipating any supply distribution disruptions. The latest survey, mentioned previously, shows that the industry is more than 90 percent ready. While there may be brief, isolated incidents or localized problems or circumstances beyond the industry's control, fuel should remain widely available. Therefore, the industry urges consumers not to risk their safety and the safety of their neighbors by storing unnecessary and possibly unsafe quantities of gasoline in the preparation for the Year 2000.

Will environmental monitoring systems at service stations be working properly in the Year 2000? Most environmental monitoring systems are time and date sensitive, therefore service stations have been working aggressively to fix computer systems, equipment, and software that may be sensitive to the Year 2000 rollover. Although the petroleum industry is not anticipating any disruptions in this area, it should be noted that since monitoring systems are equipped for fail-safe checks, if the equipment experiences problems related to the Year 2000, at the worst, the tank will simply shut down.

SSDA-AT believes that the industry will be ready for the new millennium, that product will be available, and that consumers need not panic. In fact, we are betting our livelihood on it. Thank you.

[The prepared statement of Mr. Ingle can be found in the appendix.]

Chairman BENNETT. Thank you very much.

Mr. Malone, you gave us some dates that, in the overall context of this committee, sound quite late, and you said the dates were deliberately chosen. Will you explain why you are choosing dates that are so close to the actual millennium turn?

Mr. MALONE. Well, let me start with the contingency, Mr. Chairman. We are, by design, waiting as late as we can, not with designing. We will have a lot of it done, but the formal implementation and closure of it, we are waiting as late as possible to make sure there is nothing more that we need to include in that contingency plan. So I did not want to leave the impression that we have not done anything. We are working that right now. It is going to be finalized this November.

Chairman BENNETT. You did not leave that impression, but I have never heard anybody say this will be done in November by design. Usually, we hear people saying this will be done by the end

of June, and we will deliberately get everything done as fast as possible. Here is the impression that you have deliberately picked November.

Mr. MALONE. Again, Mr. Chairman, just to make sure that we have got everything included before we formalize that contingency plan. So it will be ready, and it will just be left open until November.

The two other control systems that were talked about, we are waiting on a final engineering design and to look at whether—we know the remediation. We have a workaround if we need to. What we are working right now is to see if we can get a delivery on two of our meters. If not, we will do a workaround, and it will be in compliance. So by design means we have got a solution, but we are waiting on delivery of a part. If that does not occur, then we will do it at the end of September by workaround.

Chairman BENNETT. I see.

Now, both Admiral Naccara and Captain Davies, you heard Mr. Malone talk about the people that are going to be physically out on the pipeline getting a little chillier than they might otherwise be on New Year's Eve, and you talk about the ability of the oil tankers to handle things manually. Are there plans for larger crews? Will there be people who would otherwise be home in their beds or celebrating over the time who are going to have their holiday period interrupted because they are going to be on the ships, or can the existing size crew handle the manual operation? Either one of you or both.

Mr. DAVIES. OK. Mr. Chairman, yes, in general, our own ships, and here, generally, I will talk about Chevron itself, although I do know how many of our competitors work and the independent tanker owners that we use. Over the years, yes, the automation on ships has increased, but what is tended to happen is that the technical staff size has stayed the same. So though we now have unmanned engine rooms at sea and fully automated, we do have the staff on board because we do our own maintenance on board the ships, and that has continued to be a function.

Those same engineers, generally the electricians and electronics officers who are doing the maintenance, are also available on board to do watches. So when we get to the millennium, rather than having an unmanned engine room, we will have people on watch down in the engine room, and yes, we still do have sufficient manning on the ship to do that.

Chairman BENNETT. OK.

Admiral NACCARA. Sir, it is conceivable that the U.S. Coast Guard may require supplemental crews in some cases when vessels are entering U.S. waters. It will be one of the variables that the Captain of the Port can control. We have broad authority, certainly, and can restrict movement. We can prohibit entry of the vessel, or we would require additional crew if we thought that was necessary.

But the important element here will be the exchange of information before they reach the sea buoy, before they are about to enter U.S. waters, and we hope that we will have exchanged information so that we can have a good appreciation for the preparedness of that vessel and the port facility to which it will offload, and at that point, we can make a decision, and if the vessel is prepared, and

we feel they have had a good history in complying with international and domestic regulations, probably the vessel would be able to come in unhindered. If we have some particular cause for concern, for example if their contingency plans require additional people at certain key places, if the crew can resolve that, that would be fine, but if they need additional people, that is conceivable.

Chairman BENNETT. Mr. Malone, you were here and heard me read the example of what happened in Iraq when there was a breakdown of data. Even though it had nothing to do with the physical operation of the pipeline, it produced the same effect. How susceptible are pipeline control systems in the United States? Not just yours, but whatever you may know about other pipelines, what are the chances of a repeat circumstance like the one I described?

Mr. MALONE. Well, Mr. Chairman, I could not comment on other pipeline systems that are used.

Chairman BENNETT. All right.

Mr. MALONE. If I could, I will comment on ours.

Chairman BENNETT. All right. Fine.

Mr. MALONE. Alyeska, we do use repeaters. It is a primary communication link. So if we were to lose that communication, our immediate response, my policy is to begin to limit production and take the line down until we can re-establish communication. We have, though, two redundant—three systems: the repeaters, and we also have two backup satellite systems, and I would also say hopefully by then we will have cut over to a fiber-optic system, but the repeater is our primary one, so we would go down the minute we lose communication until we could move over to the satellites.

Chairman BENNETT. Let me ask you a question that you probably get a lot, but given the amount of hysteria that has been whipped up on some web sites about Y2K, here is an opportunity for you to set the record straight. Some people say that if the Alaskan pipeline is forced to shut down—and I wrote down you just used the phrase "take the line down"—that it will somehow freeze or congeal or whatever, and one shut down in the pipeline means the entire pipeline from Alaska down to the lower 48 becomes inoperable for all time. Do you want to deal with that particular suggestion?

Mr. MALONE. Mr. Chairman, I would love to. Let me clarify the record.

Chairman BENNETT. I thought you might be prepared for that one.

Mr. MALONE. Yes, sir. First of all, we have nine million barrels of storage in Valdez, crude storage. So we could continue loading tankers. Second of all, the pipeline does not congeal. It does not freeze up. We have taken the line down numerous times in minus 40, minus 50-degree-weather for as long as 5 days, and early studies that were done showed that the line—this was the 1977 time period—that the line could be down for as long as 20 to 40 days, and the oil inside the pipeline, which is insulated, would have to get below minus 20 degrees to get any phase change or jelling.

We also, though, have just completed tests. With the new crude mix that we have and the injection of natural gas liquids, prelimi-

nary data shows that it would not congeal at all over any length of time.

Chairman BENNETT. I am glad to have that on the record because that is one of the things we hear all the time: Gee, we are going to get an embedded chip somewhere in the Alaskan pipeline, and it is going to turn into a giant fudgecicle. We will never get any more oil.

Mr. Ingle, the most recent survey in the oil and gas service captured 48 percent of the service station sector, and I assume you are responding with your information out of that survey or some of the information about that survey. The obvious question will be, well, what about the other 52 percent, and are not we in a situation where the people who are going to be ready are responding and the people who have problems are not responding, and does not this really show that half of the service stations are not ready?

In the same spirit that I gave Mr. Malone the opportunity to deal with the doomsday scenario in his area, I give you this question so that you can respond yourself.

Mr. INGLE. In our industry, in our network that we have, we have different types of service station owners and so forth, but in our—like in my situation, I am a dealer, and I am supplied by a major oil company, the Amoco Oil Company. Most of all the systems that I have are controlled by the oil companies and the computerization and monitoring systems that we have for EPA and everything that we have.

You know, I have other problems in my industry that I need to worry about as far as car repairs and things like that. I am more worried about that than I am about the gasoline part, and I guess I will tell you that because we are pretty much assured by the oil companies that everything is going to be taken care of, and it already is because they have been working on it for years.

And I guess an analogy would be this is the business sector, and there is multi, multi-billions of dollars at stake here, and our business sector is probably—like that pipeline over there, like the human being, if it has cutoff its blood supply or had a heart attack, it is going to die, and we have got a pipeline over here on this drawing that we have, this picture over here, and if something happens to that, the blood is our fuel, and if the fuel does not come, the industry, one, is going to be totally embarrassed the oil companies as well as the dealers, as well as I will have gas lines at my pumps, and I do not want to do that again like I did back in the seventies.

I just cannot imagine this happening, because there is just too many billions of dollars at stake here, and no one is going to be embarrassed enough the let that happen, as well as the fact that all the contingency plans that I have talked to different people at Amoco, as well as the industry experts, that there is all types of backup plans and everything else that they have in place if this were to happen, because there is just too much at stake.

Chairman BENNETT. Well, if I hear what you are saying, the fact that only half of the service station owners responded to the survey is not an indication of the amount of information you have, that the major oil companies upon whom you depend for your product have

covered 100 percent of the service stations. Is that basically what you are saying?

Mr. INGLE. Yes. I have had those forms come in, and I am going to fill them out, but basically what you have got there is the oil companies are taking care of all that problem, and as dealers and talking to the other dealers, when we look at this, and we discuss it, we say, well, we are not in control of this. There is nothing we can do about it, but we surely will be on the telephone if we have a problem at our station where we are concerned ourselves with the front line with the customers, and we do not have supply or something is shut down. We are going to be right on the phones.

But we know that the oil companies are taking care of that problem, and the dealers have no control over that, other than if something happens, they are going to hear from us.

Chairman BENNETT. Well, will an oil company come in to you and say, OK, the ATM-type machine that you now have currently in your pump has got to be checked, or is that your responsibility to check that?

Mr. INGLE. The oil companies do come in and check that, yes. And we have all these systems, and I know in particular with Amoco Oil, in our system, they have gone state-of-the-art, new system, new computer system, and just in the last few years, that has been a major, major project to put these systems in that we have now at each one of our facilities, and because of all that, I am sure that a lot of the concern was Y2K.

I know credit cards concern me a lot. You know, when I look at this problem, I do not think that pipeline is going to shut off. I am, you know, 95 percent, 98 percent sure it is all going to be fine. There might be an occasional problem here or there, but it is not going to be something that is going to be long term. I am more concerned about individual credit customer coming in trying to use their credit cards at my pump and finding out there is a particular problem because this credit card company was not really Y2K ready.

Chairman BENNETT. I do not think you will have any problem with the credit card company. Our experience in other parts of this committee indicates it will be with the reader at your pump. We have had the experience where credit card companies have done what they needed with their host computers back home and then ran into a merchant somewhere whose computers and an ATM, for example, in a bank, and the particular computer at the ATM could not read a card that said 2000.

Now, we are quickly going to point where all credit cards will be an expiration date of 2000 or later by the time we get to the end of the year. If you are not at that point, your card is expired. There were some major companies, credit card companies, that delayed issuing credit cards with an expiration date past 1999 until they could check their network of merchants and make sure all of them had their point-of-sale machines remediated for just that reason. But we are beyond that point now.

Mr. INGLE. Well, we have these back up systems. You know, my businesses are completely computerized, but for instance, we used to have to stick our tanks on a regular basis, on a daily basis, and do all of that and call up and order our gasoline. We are all com-

pletely computerized now, at least most of us, and that is all done by monitoring electronic systems, which is fabulous, but if it comes down to it where it is a problem, I will get the old stick out and I will go out and I will stick the tanks. I will call it in by telephone. Hopefully the telephone is working, and we will get all of that taken care of.

So I think that is where we have got to come down to basics, to where if we have to go back to manual ways of doing business, we are all prepared to do that. But I pretty much can assure you that I do not think the pipeline and the fuel is going to be shut down. There is too much at stake here, way too much at stake.

Chairman BENNETT. I cannot resist. My first memory of a service station in the situation you have described is filling a glass bottle that has calibrations printed on it, and then you open the pump and watch the gas come down the glass bottle. I hope we do not have to go back to that.

Mr. INGLE. I hope not, because I do not know how to do that.

Chairman BENNETT. You do not know how? It is really very simple. It is really very simple.

Unless any of you have an final comment you wish to make, let me thank you all for being here. This has been a productive hearing, and we hope that not only have we added—we know we have added to the committee's knowledge about the level of preparedness, but we hope as a result of your being here, we have added to the public awareness of how far along we are here so that no one will feel the necessity to fill their garage with five-gallon cans filled with flammable material.

Thank you again. The hearing is adjourned.

[Whereupon, at 11:12 a.m., the committee was adjourned.]

APPENDIX

ALPHABETICAL LISTING AND MATERIAL SUBMITTED

PREPARED STATEMENT OF CHAIRMAN ROBERT F. BENNETT

Good morning and welcome to our hearing on Y2K and the oil industry. When Senate Resolution 208 was passed on April 2, 1998, establishing this Committee, our first course of action was to prepare a hearing on the energy sector of our Nation's economy which was held on June 12, 1998. The repercussions of a computer glitch affecting the energy business are painfully obvious.

In that first June hearing, I focused on the fact that all utilities are highly dependent on services, suppliers, and other upstream sources. Even power distribution companies are dependent on foreign oil imports. Consider for a moment what else is affected by oil. Automobiles always come to mind first—our ability to get from point A to point B. The price of gas affects how people perceive the health of our economy—and in return the perception of our economy affects the economy itself. Americans have recently seen a sharp increase in gasoline prices resulting from a unified reduction agreement among gasoline manufacturers. In March, OPEC announced that it would cut production by 2.104 million barrels of oil per day. Though under this agreement by OPEC companies the amount of oil available to the world market would only be reduced by 2.6 percent, the effect is much greater. Literally overnight, this announcement resulted in a 20% increase in gasoline prices, with prices surging by 20 to even 40 cents per gallon. Clearly a minimal reduction in world supply can have disproportionate effects on price. A reduction in the amount of available oil resulting from Y2K related mishaps poses a serious problem, and the potential for this happening is worth investigating.

When the price of gas increases, everyone is affected—whether you happen to drive a car or not. Consider who bears the cost of heightened shipping costs when product manufacturers must increase prices to offset an increase in distribution costs. When gas prices go up, virtually all prices go up. We are interested to learn whether or not this is a likelihood due to Y2K, because of the tremendous effect this may have on the economy, and on the wallets of average Americans.

Cost is not the only concern—availability is an even greater concern. The gas lines of the 1970s are still vividly on the minds of Americans who were driving at the time. A gas line in and of itself is a symbol of economic difficulty. No one wants to revisit that event. There are over 180,000 gas stations nationwide, of which 114 are right here in Washington, DC. With traffic the way it is in the District, a gas line in Georgetown or on Capitol Hill would surely bring all the beltway pundits out of the woodwork in speculation of global economic ruin. That is why we are here today. That is why we have invited our witnesses, and we thank them beforehand for their testimony.

Inherent to the availability of oil is the readiness of transportation systems and ports. It continues to be the chief priority of the Special Committee to continue to receive accurate and comprehensive information concerning the Y2K readiness status of all sectors of our infrastructure. However, getting accurate and comprehensive information from other countries presents a much more difficult dilemma. When we look for information on the status of transportation systems of countries that ship petroleum products, we are deeply concerned about what we have been able to find; information has been extremely limited. According to an anonymous reliable report the Committee received, there is an apparent lack of information characterizing the confidence of key nations about the Y2K status of their shipping services. Take for example the top three U.S. oil import sources—Canada, Venezuela and Saudi Arabia. Information on the transportation systems of these three countries, which has an obvious effect on oil distribution, has been extremely limited. In fact, only Can-

ada appears to have at least some information, and there is virtually nothing known about the status of the other two countries.

Additionally, should the oil exporting countries be able to produce and transport oil, will port readiness become a factor? Will tankers be able to dock and deliver their product? All of these questions need to be answered.

This issue is extremely complicated, and cannot be simplified by assuming that an oil shortage due to Y2K problems in one place will be offset by production and distribution in another. The United States is the largest producer of petroleum products, and Saudi Arabia remains the number one source of crude petroleum, yet there are literally dozens of other countries that participate in this global trade business, and it is a difficult task to ascertain how problems or shortages in one place might affect oil trade elsewhere in the global market.

More importantly, and something that is a fundamental problem in addressing Y2K issues for a single oil company, is the fact that myriad date sensitive systems exist within every organization. Flow meters, transmitters and smart valves all have embedded chips and are key to pipeline operation. These embedded chips are found in drilling and production platforms, whether they are earthbound or offshore. The export terminal must function, and the tanker must successfully navigate and cross the ocean. Finally, the receiving platform must operate efficiently, and all this is just to transport the crude oil from the source to the refinery. The refinery with all of its systems must function properly. Then assuming domestic transportation services and point-of-purchase services are up to speed, there should be no shortage—no lines. We are here today to find out if that's going to be the case.

PREPARED STATEMENT OF RED CAVANEY

Mr. Chairman and members of the Committee: My name is Red Cavaney, and I am president and CEO of the American Petroleum Institute. API represents over 400 member companies in every aspect of the oil and natural gas industry, including exploration and production, transportation, refining, and marketing. I am pleased to testify before you today on our industry's preparations for the Year 2000.

I want to assure this committee and the American people that the oil and gas industry is working intensively to prepare for the Year 2000 and feels it will be ready to supply our customers at that time. We have a responsibility to our shareholders, to our customers, and to our employees to be prepared. We will meet that responsibility. To do so, we have been engaged in a variety of efforts.

We have long anticipated the challenge of Year 2000 computer conversions, and the industry has been working hard on this problem for more than 5 years. Our members asked API to create a special Year 2000 Task Force to coordinate the industry's efforts and to share technical information directly among more than 50 participating oil and gas companies, and indirectly through an Internet Web site and by other means with thousands of others. Our Task Force is also sharing information with the electric power and telecommunications industries because of our interrelationship with them and our reliance on their Y2K preparations. And, we are a leading participant of the President's Council on Year 2000 Conversion where we represent 10 allied industry associations and work closely with many others. The industry's efforts are coordinated with those of the President's Council and with the Federal Energy Regulatory Commission (FERC).

Within our member companies, our industry's computer experts have been assessing, repairing, and testing software, hardware, and embedded processors. They have validated their work by testing that equipment both online and offline. And, they have been preparing contingency plans to ensure that there are responses to virtually any eventuality. Recent evidence demonstrates that all of this work is paying off.

In January, API and the Natural Gas Council surveyed the domestic oil and gas industry's Y2K readiness. This evaluation included companies of every size. We explored several facets of the domestic industry's readiness-including planning, inventory, assessment, remediation, and validation. Our survey covered both information systems and embedded chips. The 1,000 companies that responded supply 88 percent of the oil and natural gas the Nation consumes. Here is what they reported:

(The overwhelming majority of companies responding–94 percent-said they would be Y2K ready by September 30, 1999, (More than four-fifths–86 percent-of the companies are in the final stages of fixing and testing their business information systems, (Seventy-eight percent of the respondents are in the final stages of fixing and testing hardware and embedded systems to ensure their operational integrity, (Embedded chips, once seen as a major obstacle in preparing for Y2K, are not the prob-

lem earlier anticipated; and (Ninety-seven percent of the companies said they expect to have their Y2K contingency plans in place and tested before October 1, 1999.

These figures, which show an improvement in the industry's readiness, update survey data from last year. We believe it is important that the latest data be part of the official Senate record, because they show the industry's progress and also help ease any consumer concerns that are based on outdated information.

Our survey results are only one reason for our confidence in the industry's ability to meet the challenge of Y2K. Because of the nature of our industry, crisis planning is a fundamental part of any company's daily business plan. Companies must have the means available to get the job done, even if some systems fail unexpectedly. It is within that framework that our companies have been building contingency plans for Y2K into their operations. Much of the oil and gas industry's equipment already has mechanical and manual backups, so that in the event of a computer malfunction, a company can still run its equipment using mechanical devices or through manual operations. The industry often operates this way in the face of hurricanes, lightning, and snowstorms. Oil and gas companies are used to meeting challenges, and successfully handling Y2K-as large as it is-is well within our scope of competency. Still, we are taking nothing for granted and are doing all we can to assure that we are not surprised and that our systems function smoothly on January 1st and thereafter.

That said, let me turn to the source of much of our supply. The U.S. is largely self-sufficient in natural gas. In 1998, the Nation imported less than 14 percent of the natural gas we consumed. Canada was by far the leading foreign supplier, with Mexico and Algeria providing only small fractions of our natural gas imports.

Oil, however, is another matter. Last year, the Nation imported 56 percent of the crude oil consumed in the United States. That is an average rate of 10.4 million barrels of oil imports a day, according to the U.S. Department of Energy. Those supplying most of that oil in 1998 were Venezuela, Canada, Saudi Arabia, Mexico, Nigeria, Angola, Iraq, Colombia, the Virgin Islands, and Algeria.

The Department of Energy (DOE) has indicated that the four largest exporters to the United States-Venezuela, Canada, Saudi Arabia, and Mexico-are preparing their computers for Y2K and expect all critical systems to be Y2K compliant by the end of 1999. In Venezuela, PDVSA, the state oil company, is addressing the problem of computer programs and embedded chips with a clearly defined program that is moving "at an accelerated pace." Saudi Aramco has targeted mid–1999 as the deadline for its Y2K remediation problem. And PEMEX, Mexico's state owned oil company, is meeting its deadline to make its information systems Y2K ready, and appears to be on target in preparing its industrial systems for the millennium. Its goal is to be Y2K compliant by the third quarter of 1999.

In addition, Indonesia's state oil and gas company has said its computer systems will be Y2K compliant by September. Two other providers, Colombia and Algeria, are evaluating their systems and are reportedly beginning efforts to be Y2K ready. And, the United Kingdom, Kuwait, and Norway expect to be Y2K compliant, according to DOE.

Moreover, petroleum associations from the United Kingdom, Canada, Japan, and Australia are participating either directly or indirectly in API's Task Force on the Year 2000. They have access to the technical information on Y2K that our companies are sharing with one another.

American oil companies are in business all over the world. API members are indicating that their operating divisions abroad are on track to be Y2K ready. They are operated according to American standards, and they have contingency plans in place to deal with problems.

Still, to improve Y2K readiness abroad, and to determine the international oil industry's ability to meet the U.S. demand for energy, API's International Oil Y2K Work Group joined with FERC, DOE, other Federal agencies, and the International Energy Agency to create an International Oil Coordination Council. Council members exchange information on industry and government efforts and are working to assess the industry's Y2K readiness on an international scale.

What if things abroad do go awry because of Y2K? There are a number of factors to consider in evaluating the impact. First, there is a great deal of crude oil production capacity in the world. If one country cannot export, another may be able to compensate. Second, even if a number of suppliers experience Y2K problems, imports into the U.S. would not stop instantly. There is always some crude oil enroute to the U.S. via tankers, some of which can take 5 weeks to cross the seas. If foreign suppliers have production problems, we will know this the day it happens. It will be an early warning alert that will give the industry time to move supplies around and compensate for lost production. The industry intends to be prepared to minimize the impact of any failures abroad. If they can be remedied in a short period

of time, then the disruption should be manageable, since inventories can buffer short delays in securing imports. Third, as for oil and gas industry equipment itself, we do have experience in what would have to be done to redress Y2K problems. Finally, beyond private resources, the Federal Government owns and operates the Strategic Petroleum Reserve (SPR). We regard the SPR as an essential buffer to protect the economy in the event of a serious interruption in foreign oil supplies-such as the two disruptions that occurred in the 1970's. In our view, the SPR is a resource that could be used if Y2K conditions eventually warrant their use.

The petroleum industry's Year 2000 efforts are designed to ensure that products will continue flowing to consumers as usual on January 1, 2000, and thereafter. Although the industry has never experienced a challenge quite like this, there have been other disruptions to the flow of oil, and there is a record of our industry's response.

In a 1989 report to the Secretary of Energy, the National Petroleum Council said it had made 10 inventory studies over the past 50 years to help the Federal Government in its emergency preparedness. The NPC noted that "since the end of World War II, no serious petroleum shortages have occurred at the consumer level except gasoline lines in the era of price and allocation controls." Yet, NPC said, the system has experienced repeated stress, including refinery problems that led to reduced gasoline production in 1988, fuel-switching by electric utilities from natural gas to oil at the time of a heat wave in 1986, and a cold wave that reduced both crude and refinery production in 1983–84.

The oil and gas industry was able to overcome the stresses to its systems because contingency planning and crisis management are a fundamental part of each company's business plan. Most recently, this industry's flexibility enabled it to serve its customers during the hurricanes of 1998 that disrupted offshore production in the Gulf of Mexico and caused problems at some refineries. It has continuously brought its products to market despite actions like the Persian Gulf crisis and the gasoline supply difficulties of the summer of 1997. The industry seamlessly drew on inventory, or used alternate routing to deliver its products, or coped with supply problems when refineries were offline for maintenance by asking other refineries to step up operations to pick up the demand.

The NPC study also evaluated the impact of six hypothetical stress scenarios on the industry's ability to deliver. NPC considered a disruption of oil imports, colder-than-normal weather, a disruption of natural gas imports from Canada, a disruption in the flow of products in a Midwestern pipeline, a 30-day shutdown of the Trans-Alaska Pipeline System and a 30-day disruption of oil imports from Canada. While the study did not include a Y2K problem, it showed the industry's ability to respond and what might happen if supplies were disrupted. NPC reported that "each of these disruptions could be handled with varying degrees of problems, but without major hardship, because of the resiliency and flexibility of the nation's supply system." At the end of the day, the critical question is: "Can we give you a 100 percent guarantee that absolutely no problems will occur and consumers, without exception, will find what they want when they want it?" No one can make such a blanket assurance because we live in an interdependent world. But we can guarantee that the domestic oil and natural gas industry is well prepared to serve our customers and keep energizing our economy. We can guarantee that the domestic oil and natural gas industry has been and is working very intensively on many fronts to prevent Y2K problems from arising and to successfully handle those problems that do arise.

The process of manufacturing gasoline, heating oil, diesel fuel, motor oil and the feedstocks from which essential products are made is not a real-time event. We are used to managing our way around inconveniences and interruptions at our facilities. We are used to responding to outages by redirecting the flow of products and by drawing on inventories as necessary. We believe that capability will enable the industry to handle whatever situations arise with minimum inconvenience to our customers.

We know that some who remember the gasoline lines of the 1970's may question our resolve. But every competent analysis of that era concluded that those lines were the result of government price and allocation controls, not a shortage of gasoline.

A well-informed consumer is our best ally. That is why we are concerned about misinformation on the impact of the Year 2000 conversion being trafficked in the public domain. We are concerned that some who may mean well but are nonetheless uninformed are inviting unintended consequences in the marketplace when they recommend that consumers should take their money out of the bank, or fill their gasoline tank, or horde gasoline and groceries. Such changes in behavior could produce consequences that are totally apart from how well our industry and other industries are doing the job of preparing for the future. Congress can help by put-

ting out factual information about industry preparedness to deal with Y2K, and by avoiding any unnecessary constraints on the private sector, which has a direct commercial interest in assuring a continuous flow of products and services to consumers. Congress can also use its oversight role to assure the Y2K readiness of the SPR, should it be needed.

The Year 2000 conversion has a very high priority at API and throughout the oil and gas industry. We are service industry, and we fully expect to meet the tests of the millennium. What I have presented here represents the highlights of what we are doing. Additional information is available on the API Web site at www.api.org/y2k. It includes a Y2K data base created to foster the sharing of critical information on testing software, hardware, embedded systems, and related components. Our site also includes information on what government is doing and what our companies are doing as they prepare now to meet consumer needs next year, and thereafter.

We appreciate the opportunity to testify today and to update and enhance the public record on the oil and gas industry's preparations for the Year 2000.

Thank you.

RESPONSES OF RED CAVANEY TO QUESTIONS SUBMITTED BY CHAIRMAN BENNETT

Question 1. You mentioned in your testimony that API represents over 400 member companies in every aspect of the oil and natural gas industry. You also indicated that API has created a special Y2K task force with more than 50 participating oil and gas companies. Can you explain what is being done to ensure that the remaining 350 companies are also coordinating their efforts to become Y2K compliant?

Answer. While it is true that only 50 companies actively participate in API's Year 2000 task force, these 50 companies represent the overwhelming majority of the U.S. petroleum industry. Specifically, these companies represent:

- 80 percent of U.S. oil and natural gas production.
- 73 percent of U.S. refining capacity.
- 70 percent of U.S. pipeline deliveries.
- 43 percent of U.S. retail service stations.

In the upstream area in particular, many of the companies that are not participating in our task force are likely to be joint venture (JV) partners in various exploration and production efforts with one or more of the 50 companies that are participating in task force meetings and workshops. The commercial integrity efforts within these JVs that are driven by task force member companies would make non-member companies fully aware of their potential Y2K problems and would quite likely spur them to address those problems. The interdependency of a partnership is encouraging this.

Similarly, those 350 companies have customers and suppliers that are concerned about their own commercial integrity and are encouraging those oil companies to develop robust Y2K programs as a matter of self-defense.

Equally important, the free enterprise system has nurtured the development of a Y2K industry. There are consulting firms, Y2K-specific publications and Y2K computer experts who are actively marketing their services. This new Y2K industry is not only working with some of the 50 companies that are participating in the task force, but it is undoubtedly working with a portion of the 350 companies that are not task force members.

Question 2. The results of your survey are very reassuring and impressive. API's efforts are to be commended. You even noted that 97% of the companies expect to have their Y2K contingency plans in place and tested before October 1, 1999. Will you please describe how this testing is going to be done? What kind of business continuity and contingency plans are in place? What happens to the companies that fail to meet this deadline? And to those who did not respond to the survey?

Answer. The petroleum industry in the United States is extremely competitive. Moreover, the United States government has very strict laws in place to prevent anti-competitive collaboration among oil companies. As far as I know, there is no industry-wide contingency plan in place. I want to emphasize, however, that our companies have a clear understanding of the additional business risk that Year 2000 problems present to them. They understand that they have a duty to serve their customers, to protect their shareholders, to preserve their brand images and to maintain their reputations. That is why Year 2000 preparations in this industry began five years ago. That is why the investment in Y2K preparations by oil and gas companies now exceeds $2 billion. I do not know a single CEO in this industry who would stand by and let so highly publicized and highly predictable an event

as the computer changeover damage the company that he or she leads. These companies have prioritized their risks and have put contingency plans in place to address them.

Contingency planning is a fundamental part of the oil and gas business. From exploration to production to transportation and refining, this is inherently a risk management business. Oil companies have proven over the years that they are excellent at understanding and managing their risk portfolio. The Year 2000 issue merely adds another facet to the risk management dimension.

Industry contingency plans are routinely tested (or "exercised") in the oil industry through the use of what are called "table-top" and "real-time" drills. These drills are designed with specifically identified objectives in mind for whatever aspect of the contingency plan is to be tested. To prepare for the Year 2000, these contingency plans are being retested by individual companies via simulated Y2K scenarios that test response capabilities and processes—some on a worldwide basis.

For those companies that fail to meet the October 1, 1999 date by which 97 percent of the industry expects to have contingency plans in place, several things could happen:

(1) Nothing. It might not be a problem in some cases. Companies could get their plans in place between October 1 and the end of the year. Or they might not be highly automated or use systems that are date dependent. Or they may not have one of the very few embedded systems we're seeing that have a significant impact on safety, the environment or production effectiveness. Or they may not have key suppliers or customers that fail or would be interrupted. Under those circumstances, a company might not see an impact on their business.

(2) If they are publicly traded companies that have to file an SEC 10 disclosure, and they disclose as required, their market value could be negatively impacted when investors realize the additional risk associated with owning shares in a company that lacks Y2K contingency plans.

(3) If a company fails to put appropriate contingency plans in place, and events at key dates cause problems, they potentially won't be able to deal effectively with failures and interruptions. If these are significant, either in magnitude or duration a company could potentially lose market share and suffer the consequences.

At the end of the day, preparing for Y2K is about preparing for business continuity. It is about survival and that is driving companies to develop appropriate Y2K contingency plans, over and above the activity sponsored by API and the President's Council on Y2K Conversion.

Question 3. The National Petroleum Council (NPC) study covering the six hypothetical scenarios on the industry's ability to deliver oil and gas seems fairly thorough as it assesses variables that are seemingly unrelated. But each of these scenarios was distinct and finite in its disruption possibility. What will happen in the gas and oil industry if, as a result of Y2K, more than one of the scenarios happens simultaneously or the disruptions create an aggregate bigger than the singular previously studied?

Answer. We believe that the likelihood of significant simultaneous disruptions in the Year 2000 is not much higher than likelihood of simultaneous disruptions today. As I said in response to question Number Two, our member companies deal with risks on a daily basis and are prepared to cope with any number of risks simultaneously.

Question 4. Your testimony mentions specific contingencies for the transportation of oil and gas. However, I am interested to know more about what is being done to ensure the readiness of oil refineries for Y2K. Will you explain how oil refineries are doing in their efforts to become Y2K compliant?

Answer. Like many others in process control industries, we originally believed that Year 2000 problems posed by "embedded chips" would have an adverse impact on our refineries. After a significant amount of testing and impact analysis, we recognize that the Year 2000 impact of "embedded chip" microprocessors at our plants will be minimal.

In addition to our industry's extensive work in the embedded systems area, our refineries have also focused on three additional areas: Remediation of our business information technology (IT) systems; analysis of our suppliers and customers; and development of contingency plans. The vast majority of our member firms will have completed the remediation of their highly critical business IT systems, and the replacement of the small number of systems containing affected "embedded chips," by June 30. In addition, after having analyzed the Year 2000 readiness of their key suppliers and customers, refiners will have in place contingency plans that will be exercised in case of a failure of any of their key suppliers or customers.

Question 5. You mentioned that the four largest oil exporters to the U.S.-Venezuela, Canada, Saudi Arabia and Mexico, anticipate having all critical systems

compliant by the end of the year. The largest supplier of oil to the U.S. is Venezuela. In our report released on March 5, we compiled data that Venezuela was 9 to 15 months behind the U.S. in its Y2K preparation. Furthermore, many countries have underestimated the Y2K impact and have under-prepared. Although you state that oil companies will be prepared for the Year 2000, have there been any surveys conducted, or research done, to verify that the oil companies' critical systems will not be affected if other industries, such as power, are not prepared? Would you comment on business continuity and contingency planning within these countries?

Answer. Many API member companies operate facilities in countries where basic infrastructure support, such as electrical power and telecommunications, is not reliable. Our companies have learned to deal with those interruptions, sometimes by developing their own generating and communications systems. Our companies are used to working their way around those disruptions and minimizing their impact on operations. Accordingly, one more disruption because of the Year 2000 will not have a serious impact on operations.

As for those countries that are reported to be significantly behind the U.S. in their progress, there are two factors at play. First, they may not be as automated and as technologically sophisticated as is the U.S., Western Europe, Canada and Australia, and thus may not have the problems that we in the West have identified. Second, they may actually be able to correct their Y2K problems more efficiently and cost effectively than did U.S. companies because as "fast followers" they can benefit from what the "pace setter" countries and "pace setter" companies have done.

This sharing and leveraging of knowledge is taking place at a pace that is amazing. We have an Internet and e-mail literate, globally focused workforce addressing Y2K issues not only in the oil industry, but in most industries. Information, best practices, testing results, and knowledge is being shared, literally at the speed of telecommunications.

Moreover, the inter-related nature of our industry means that key suppliers and customers must remain healthy so that we stay healthy. That is why companies are pushing each other to complete their Y2K programs. Those nations that are further behind are getting input, advice and sometimes assistance from their U.S. Western European, Canadian and Australian investors, from colleagues and even from competitors.

Finally, organizations such as the World Bank, the International Energy Agency and API are catalyzing awareness and assistance programs all over the world.

Question 6. The development of effective contingency plans involves the participation of all stakeholders and parties who will be called upon to execute the contingency plans should the need arise. Would you describe how the petroleum industry is involving its workforce in the development of contingency plans? Is employee awareness raising and training widespread as a part of the efforts? How about community and emergency service provider involvement?

Answer. Most of our member firms have in place, as part of their normal business process, contingency plans that are exercised frequently. These same companies are simply utilizing the existing contingency planning "network of experts" and providing them additional background on the special nature of the Year 2000 problem. It is the very workforce that operates the fields, the transportation systems, the refineries and the retail outlets that *do* the contingency planning. Workforce ownership of contingency plans is critical to the potential success of the plans. Their involvement in identifying where plans are needed, developing the plans, testing these plans through drills and refining them based on what they learn from the drills is mandatory in companies with healthy contingency planning processes.

The workforce in the oil industry is highly motivated to keep their working environment safe and reliable. They realize that to do this effectively, contingency plans are necessary. The workforce realizes that Y2K is just one more operational and business risk to be recognized and to be managed.

Also, as part of our support for the President's Council on Y2K Conversion, API is proactively urging Year 2000 experts in its member companies to become involved in the "Community Action" awareness program. We have seen a good number of these people become involved at the community level.

PREPARED STATEMENT OF PHILIP M. DAVIES

Good day, Mr. Chairman, and members of the Committee.

My name is Captain Phil Davies. Today, I am testifying on behalf of the American Petroleum Institute (API). API is a national trade association representing over 400

companies involved in all aspects of the petroleum industry. A significant number of API companies own, operate, or charter substantial tanker fleets.

I am currently Area Operations Manager for Chevron Shipping Co. LLC (CSC). We operate 35 oil tankers on trade routes throughout the world, and we have a similar number of third-party ships under charter at any particular time. I am responsible for CSC operations throughout the eastern and southeastern United States. Prior to this assignment, I was Year 2000 (Y2K) program manager for Chevron Shipping. In addition to my duties within the company, I have participated at several conferences around the world to raise the awareness of Y2K within the marine community.

I am happy to say that since these conferences and, particularly over the last several months, my opinion of the readiness of the oil shipping industry to meet the challenges of Y2K has changed considerably. We have generally prepared well, and we do not expect major problems at the turn of the millennium.

Through industry organizations such as API, the Protection and Indemnity clubs, ship classification societies and the efforts of the U.S. Coast Guard and other international government organizations, there has been a sharing of data on an unprecedented scale. This information has been shared among major oil companies, independent tanker operators and manufacturers. Various sites on the Internet provide a wealth of information for those looking for compliance data for equipment fitted to their vessels.

Process—Vessels Most companies involved in Y2K assessment follow a phased approach that consists of:

* Identifying equipment, systems, and system integration on board ship, which could be adversely affected by date changes.

* Determining the level of risk to the vessel that could result from failure of each system.

* Prioritizing systems based on level of risk and obtaining manufacturers' advice on compliance and/or test procedures.

* Developing contingency plans for those systems where compliance cannot be reasonably confirmed. This may include system replacement, alternative operational modes, or operational restrictions to ensure safe operations.

Equipment that is critical to the ship's operation tends to fall into four areas: Propulsion, Steering, Navigation/Communication and Cargo. Most problems to date have been found in either control processors or in the communications equipment. Both of these areas employ a high degree of PC-based computer control, which are generally easy to repair or replace.

Though the majority of systems will be repaired or replaced in the lead up to December 31, 1999, there will always be some potential for equipment to fail onboard due to a Y2K malfunction. Within Chevron Shipping, vessel staff has developed contingency plans to address these failures, and onboard routine is developed around them. In the case of Y2K, vessels will generally set watch routines to monitor equipment where the compliance is not known. This coverage is a part of most vessel contingency plans.

Seafarers are trained to deal with emergencies and contingencies, and face adversities daily such as we can expect could arise from the Y2K problem. Seafarers are a resourceful lot, and our ships are routinely designed with redundancies and manual workarounds for critical systems and, in the case of navigation, to utilize traditional methods.

Vessel Availability In the marine oil transportation industry today, crude and products are transported in either oil company vessels or tonnage chartered on behalf of oil companies. A key role in this chartering of vessels is the inspection and vetting process, which ensures the vessel is in acceptable operating condition and is in compliance with applicable rules and regulations. In conjunction with this inspection, Chevron and other companies have been including vessel assessments and the owner/operator's commitment to Y2K compliance efforts. This assessment includes appropriate equipment audits, necessary remediation, crew awareness, and the existence of contingency plans. In order to ensure a continued supply of crude and products, Chevron will charter only those vessels that are compliant and have contingency plans in place. Fortunately, over the last few months most of the operators that we use have realized the potential implications of the Y2K problem and have instituted programs to address the concerns.

In addition to the oil companies' program, the U.S. Coast Guard is now including Y2K awareness efforts in its onboard inspection program. This further helps to focus the attention of owners and operators.

Contingency Planning Contingency planning is a key step in the Y2K process. It takes two forms:

* Preparing to operate the vessel with equipment that may fail.

* Positioning the vessel such that the effects of Y2K failure either onboard or on another vessel or facility will have minimal impact on the safety of the vessel, crew, environment, and the cargo.

The operation of equipment has been covered above and will be covered as a part of normal vessel operating procedures. In order to minimize any external effects on the vessel, there are various steps that Chevron is taking to minimize the risk:

* Keep vessels at sea or alongside in port.
* Suspend cargo operations during critical periods.
* Increase awareness onboard vessels.

We believe other companies are addressing contingency planning in a similar fashion.

API and its member companies support the U.S. Coast Guard effort to develop national guidance to ensure key elements are addressed in local government contingency plans for ports. Such guidance should provide sufficient flexibility to allow individual ports to address their own specific needs. The U.S. Coast Guard, through the Captains of the Ports or District Commanders, should take the lead in all major ports to convene stakeholder groups that would be charged with assessing port readiness, addressing potential areas of deficiency, and preparing appropriate contingency plans. For example, most ports already sponsor port safety committees that have broad membership from government, industry, citizen, and public interest groups. Stakeholder groups can help each port assess the safety measures necessary to ensure continued port operations during the critical dates of concern. These groups, with U.S. Coast Guard leadership, will be able to ensure the compatibility of individual stakeholder contingency plans within the port contingency plan.

In conclusion, due to the leadership of the U.S. Coast Guard and the initiative of API and its member companies, the level of awareness of the Y2K problem is such that the impact on the oil transportation infrastructure is expected to be minimal. Of course, Chevron and API members will continue to develop contingency plans with the U.S. Coast Guard and the oil transportation industry. The millennium rollover and its effects are not an emergency or surprise event. Our awareness of the problem has allowed us to plan well in advance, and the industry has the knowledge and tools to deal with any problems that may arise.

I would be happy to answer your questions.

RESPONSES OF PHILLIP M. DAVIES TO QUESTIONS SUBMITTED BY CHAIRMAN BENNETT

Question 1. In your testimony you stated that you did not expect any major Y2K problems to occur. You also stated that "over the last few months" most of the operators of your chartered vessels have realized the potential Y2K implications and have established programs to address the concerns. Is it realistic to be so optimistic when you chartered vessel operators only became fully aware of the problem over the last few months? Can you explain how it will be possible to complete all assessments and testing with the little time remaining?

Answer. Fortunately in the shipping industry, though our business is very widespread we rely upon a limited number of suppliers for both our vessels and the equipment on them. If a single entity were starting their remediation program today, then it is unlikely that sufficient time would exist to complete the program. However, in the marine industry companies have been able to leverage from those who started early. This has been made possible by both the myriad of web sites and by the sharing of information in industry forums and conferences. In addition to the data sharing, manufacturers have become far more proactive in their approach to Y2K and its effect on their equipment.

Question 2. You also mentioned the various steps Chevron is taking to minimize risks, such as keeping vessels at sea or alongside in port, and suspending cargo operations during critical periods. I applaud your efforts to be prudent in your preparedness. Do you feel there are competitive pressures on other shipping companies not to take the same steps as Chevron, for fear of losing business? For example, shipping companies switching to other ranker fleets?

Answer. Chevron Shipping is fortunate to operate in an environment that nurtures Protecting People and the Environment, hence our ability to take the prudent measures outlined in my testimony. However, we believe that many other operators are taking similar measures and that those who act otherwise will still have to comply with Port State Control through measures such as those contained in IMO circular 2121, Year 2000—Code Of Good Practice.

Question 3. The maritime insurance industry is critical to shipping, and has been for hundreds of years. What are they doing at this point in time to minimize their risks and client's liability in relation to Y2K?

Answer. This is not my area of expertise, however the Protection and Indemnity (P&I) clubs in particular are to be commended for their efforts to both promulgate information on Y2K and their help to the maritime industry in developing Y2K mitigation and contingency plans. Two web sites which may give the committee greater insight in answering this question are:

Ship 2000: http://www.ship2000.com

UK P and I Club: http://www.ukpandi.com

Question 4. You are an international shipping company and operate in many foreign ports. Has Chevron or API conducted any surveys regarding the status of international ports? What can you tell us about the preparedness status of the foreign ports where Chevron operates?

Question 5. As a leading shipping company, what has been the extent of Chevron's dialogue with host governments in foreign countries? What have you learned about the readiness of foreign ports?

Answer (Questions 4 and 5). Chevron has had little contact with outside governments on their readiness for Y2K. However, many of the terminals at which we load are operated by the Chevron Overseas production company. These terminals have completed similar projects to our own and are Y2K ready. Outside of these terminals, we have received notice from Saudi Aramco that they are Y2K ready.

Question 6. Does Chevron support the Year 2000 Code of Good Practice and key elements of Y2K contingency plans for ships, ports and terminals that were developed as a result of meetings held at IMO headquarters on March 3–4, 1999? What is the best method to get information about them to the myriad stakeholders in the maritime industry for appropriate action?

Answer. Chevron supports both the IMO Circular 2121, Year 2000 Code Of Good Practice, and the US Coast Guard in its efforts to develop contingency plans for US ports in readiness for this period. We are working closely with both the US Coast Guard and port user groups in those areas to which we trade to develop and implement contingency plans. In terms of IMO Circular 2121, we believe that through Port State Control, International & National Maritime groups, and P&I clubs that the IMO circular will reach a broad audience. In addition, industry publications such as Lloyds List and Fairplay have also given wide coverage to the Millenium Bug, and it is hard to conceive that in the wider maritime community anyone is unaware of the problem.

PREPARED STATEMENT OF CHRISTOPHER J. DODD

Mr. Chairman, thank you for holding this hearing today.

The world oil supply faces a series of Y2K risks from the well in the ground to the gas station in your neighborhood. In addition to the immediate Y2K problems that oil companies face, the readiness of the shipping industry and international ports presents an even more difficult challenge. A breakdown in the international shipping industry could have a crippling effect on the oil industry. More than 80,000 visits are made to U.S. ports by over 7,000 foreign vessels in any given year. And yet we have little information on the readiness of these ships and foreign ports.

Like other global sectors the Committee has examined, we find that the oil industry is highly dependent upon maritime shipping. Oil tankers for example depend on reliable on-board navigation, communication and safety systems, all of which are vulnerable to Y2K problems. In 1998, Shell Oil examined one of its crude carriers, which was built in 1996. Y2K testing revealed failures in seven areas, including radar system mapping, ballast monitoring and ship performance monitoring. According to Shell, "Not one of these failures would stop the ship, but they might if they all happened together." Overall, when Shell assessed their fleet, it found approximately 3,000 embedded chips on its 50 vessels. Embedded microchips play an important economic role in modern shipping because they allow even the largest tankers to operate with very small crews. The highly automated functions make it difficult for a small crew to manually operate the ship in an emergency.

Even if oil tanker crews can "work around" their Y2K problems, the crews could quickly become overworked, compromising safety. Passenger cruise and container ships are more reliant on technology than oil tankers. Y2K failures on these ships would be even more difficult to correct.

Ships that experience Y2K-related failures could begin to clog ports, denying accessibility to other ships and creating serious logistical problems.

With the exception of North America and Northern Europe, the actual Y2K readiness of the international ports remains a virtual unknown. When a ship arrives in port, Y2K related failures could prevent cargo from being unloaded and oil from being pumped out of tankers. Y2K difficulties in ports could include the failure of the giant cranes used to offload containers from ships and could also create congestion. According to the International Energy Agency, one oil company found that a dockside crane refused to operate because an embedded chip determined that it was overdue for a technical inspection.

Some companies, such as British Petroleum (BP), are taking a very proactive approach to Y2K. BP is very influential in the shipping business and is the world's third largest user of oil carrying vessels. In May 1998, BP surveyed 650 companies from which it chartered tankers. BP made it clear that failing to respond to the questionnaire would result in termination of charters with the oil company. The response was disappointing. Half of the companies that BP had used in the previous two years were unable or unwilling to disclose the Y2K readiness of their vessels. Beginning in January 1999, BP started refusing to employ vessels that could not offer an assurance of Y2K readiness. The shipping companies' failure to prepare for Y2K has put not only their individual businesses at risk but also the livelihood of their employees. We have seen evidence of this "flight to quality" in other industries and it will likely continue into the Year 2000. But while BP and other companies might be able to obtain Y2K ready charter vessels, they cannot make international ports compliant. This will take a concerted worldwide outreach to raise awareness and promote realistic contingency plans.

In the event there were to be a problem, the U.S. has over 540 million barrels of oil in reserve. In 1975, the Strategic Petroleum Reserve was created as a buffer to ensure that Americans do not suffer the inconvenience and disruption that the oil crisis of the 1970's caused. So, despite the fact that we rely on imported oil for over 50% of our oil usage, the strategic oil reserve can replace imports for up to 60 days. Should Y2K spark an interruption in the oil supply, the Strategic Petroleum Reserve could be used to stabilize markets, reduce sudden price spikes and buy time to resolve any lingering problems. The oil industry is working hard to solve its Y2K problems and is trying to achieve Y2K readiness by September of 1999. However, Y2K failures in maritime shipping and foreign ports still pose serious threats to the flow of oil and our economic well being.

PREPARED STATEMENT OF MICHAEL J. INGLE

Mr. Chairman and Members of the Senate Special Committee on the Year 2000 Technology Problem, my name is Michael J. Ingle and I appreciate the opportunity to appear before you today to present the dealer community's views and projections concerning gasoline availability on January 1, 2000.

I have been a dealer for 30 years and currently operate 2 Amoco stations—in Lanham and Bowie, Maryland. I am currently serving as President of the Washington/Maryland/Delaware Association which represents over 1,000 small business members. I am also Treasurer of the Service Station Dealers of America and Allied Trades (SSDA–AT). SSDA–T is a 53 year-old national association representing 22 state and regional associations with a total membership in excess of 20,000 small businesses in 38 states; and individual members in all 50 states, the District of Columbia, Puerto Rico, and Guam.

Like the motoring public, we too are concerned about product availability and distribution on January 1, 2000. While dealers are dependent on their suppliers, we are on the front lines when consumers have concerns. And we are dependent on the sale of motor fuel.

The petroleum industry has been actively addressing Year 2000 challenges for the past several years. While individual service stations are at varying levels of compliance, the major petroleum companies have not identified any Y2K challenges that cannot be overcome. In particular, oil companies and their service stations have reached out to business partners, customers and suppliers in order to develop compatible solutions and share best practices. Throughout the country, seminars have been presented to the retailing end of the industry. We have one such meeting scheduled for May 20 in Annapolis, Maryland.

Just as petroleum marketers are used to preparing contingency plans for supply disruptions and natural disasters, preparation for the arrival of the Year 2000 has been no different. Special contingency plans and back-up suppliers and systems are in place to allow for uninterrupted service to consumers. Based on recent industry surveys by the Natural Gas Council and the American Petroleum Institute, the petroleum industry as a whole is well on its way to being Y2K ready. In fact, almost

all companies surveyed indicated that they will be Y2K ready by September 30, 1999.

Following are some commonly asked questions by the public regarding our industry and this issue.

Will service stations be open December 31, 1999 and January 1, 2000?

Yes, depending upon the store's usual hours. The Year 2000 is not expected to be a factor in unscheduled store closings.

Will I be able to use my credit car at a service station on or during the Year 2000?

Credit cards were one of the first Y2K issues widely recognized and publicized. Therefore, service stations, along with the entire retail industry, have been analyzing, replacing and testing credit card systems to ensure Year 2000 compliance. They have also been working closely with credit card companies in order to guarantee that business processes are not compromised with the rollover to the new millennium. In isolated incidents, computers could have problems with some credit cards. The result would mean that some of these credit card automated tasks would have to be done manually.

What are retailers doing to ensure that gasoline will be available and fuel pumps will be functioning in the Year 2000?

Most service stations' lights, fuel pumps, and registers rely on electricity in order to work. Thus, service stations are working closely with their utility providers to ensure a smooth transition to the Year 2000. In particular, the electric utility industry is preparing for the new millennium and aiming for 100 percent reliability of electric power on January 1, 2000. According to a North American Electric Reliability Council (NERC) report, virtually all-electric power systems in North American will be ready for the Year 2000 by the target date of June 30, 1999.

Consumers can expect few, if any, shortages of petroleum-based fuels in the Year 2000. Service stations are working to ensure reliable, uninterrupted service. Even if there are some isolated supply interruptions, the impact on consumers will be minimal, as service stations generally have back-up suppliers. So, if their primary supplier experiences Year 2000-related problems, service stations have additional suppliers they can contact.

Should I be stockpiling gasoline in preparation for the Year 2000?

There is absolutely no reason to stockpile gasoline in anticipation of the Year 2000. The petroleum industry is not anticipating any supply or distribution disruptions. The latest survey mentioned previously shows that the industry is more than 90 percent ready.

While there may be brief, isolated incidents of localized problems or circumstances beyond the industry's control, fuel should remain widely available. Therefore, the industry urges consumers not to risk their safety and the safety of their neighbors by storing unnecessary and possibly unsafe quantities of gasoline in preparation for the Year 2000.

Will environmental monitoring systems at service stations be working properly in the Year 2000?

Most environmental monitoring systems are time and date sensitive. Therefore, service stations have been working aggressively to fix computer systems, equipment and software that may be sensitive to the Year 2000 rollover. Although the petroleum industry is not anticipating any disruptions in this area, it should be noted that since monitoring systems are equipped with fail-safe checks, if the equipment experiences problems related to the Year 2000, at the worst, the tank will simply shut down.

SSDA–AT believes that the industry will be ready for the new millennium; that product will be available; that consumers need not panic. In fact, we are betting our livelihood on it.

RESPONSES OF MICHAEL J. INGLE TO QUESTIONS SUBMITTED BY CHAIRMAN BENNETT

Question 1. In your testimony, you addressed issues related to the availability of gasoline at the pumps. Given your experience, are there elements of Y2K that would indicate to you that there may be an impact on gasoline prices at the pump? Could you please describe them?

Answer. No, we do not anticipate shortages of product that would lead to increases in prices more than any normal fluctuations due to the marketplace.

Question 2. As we have looked at other industry sectors, we have found that small and medium sized businesses tend to be lagging in their Y2K efforts. You note in your testimony that as President of the Washington/Maryland/Delaware Association

you represent over 1,000 small businesses. You also noted that the petroleum industry began actively addressing Y2K several years ago. When would you say that your members began? Also, please briefly describe the current activities and general preparedness of your members?

Answer. Our members have been actively working with their suppliers in anticipation of Y2K for the last year. They have attended seminars on the subject and received ample literature from our association. In addition, our supplier representatives have personally visited many stations in addressing Y2K to ensure that our systems meet the requirements necessary.

Question 3. I understand that a majority of your members actually lease the pumps (including the integrated credit card readers that many pumps have today) at their gas stations. Would you please briefly describe the equipment at a station that is leased and what is owned? Who has responsibility for maintenance of the leased equipment? What type of end-to-end testing is being done?

Answer. The majority of equipment at our members' facilities is leased from the major oil companies. This includes the pumps, card readers, etc. The oil company has the responsibility of maintaining the equipment. They are actively conducting testing at the local level for compliance.

Question 4. Your testimony refers to the American Petroleum Institute's (API) industry survey. API's survey profile shows that only 48% of US service stations were represented. This was the lowest rate among the industries surveyed. Would you please help the committee understand why service stations had such a low representation? With over half of the service stations represented, how confident should we be that the positive picture painted by the survey is a reflection of reality and applies to service stations?

Answer. As explained in our testimony and also in API's, the industry began its Y2K readiness at the top and has worked it down to the local service station, where testing is being currently conducted. We are confident that the industry will be ready on January 1, 2000 and product will be available.

Question 5. Service Station Dealers of America's (SSDA) annual convention is scheduled for the week of June 9–12 in Nashville. This seems like an opportune time to address this critical pressing problem. Are you planning on addressing Y2K as part of the convention? What type of participation do you expect from your members and the large companies that lease equipment to your members?

Answer. We had a seminar at our convention (held jointly with the International Tire and Rubber Association) addressing Y2K and the topic was brought up in other meetings at the convention. We had several exhibitors that are involved in computer software and equipment that are very active in Y2K issues.

Question 6. Your testimony indicates that Y2k seminars have been presented to the retailing end of the industry throughout the country and one such meeting is scheduled for May 20th in Annapolis. Is SSDA sponsoring these meetings? What is the focus of these meetings, the general attendance, and participation?

Answer. SSDA–AT and its state and regional affiliates co-sponsor these seminars along with the API and other industry groups. They are open to all members of these industry organizations. The focus is to educate members on Y2K issues and increase awareness of potential problems and what issues need to be addressed when dealing with their suppliers.

Question 7. What are the types of key activities service stations should be including within the areas of independent verification and validation (IV&V), end-to-end testing as well as business continuity and contingency planning?

Answer. Service station dealers are working with their landlords/suppliers (i.e., major oil companies) to ensure proper planning and conduct proper testing. This is being done under the direction of the oil companies, who own the equipment in the stations.

PREPARED STATEMENT OF ROBERT S. KRIPOWICZ

Mr. Chairman and Members of the Committee:

The Department of Energy is working with the President's Council on Year 2000 Conversion and our nation's energy industry to ensure readiness for the Year 2000. As a member of the President's Council and as part of our overall energy readiness responsibilities, we are monitoring the Y2K compliance efforts of the domestic energy sector (including electric power, nuclear power, and the oil and gas industry) and selected international energy sectors (including oil and nuclear power). We are reviewing industry assessments, identifying potential assistance the Department can provide, and coordinating with industry on contingency planning.

As we get closer to the millennium transition period, the Department will be monitoring and analyzing any Y2K events and incidents, and will be working with industry on response actions as appropriate. The Department will also take an active role in providing public information concerning Y2K and the energy sector.

Before I address these activities as they relate to concern over the future oil imports, I would also like to note that DOE is making excellent progress in converting its own systems to be Year 2000 compliant. As of March 31, 1999, 98 percent of DOE's mission critical systems were Y2K

ready, including all of the mission critical systems of DOE's power administrations.

The President's Council on Year 2000 Conversion International Oil Aspects The Department's Deputy Secretary is a member of the President's Council on Year 2000 Conversion. Within the Council, DOE was initially assigned responsibility for the electric power sector, and the Federal Energy Regulatory Commission (FERC) was assigned responsibility for international oil and gas. Since the group's formation, DOE has worked closely with the FERC

and the American Petroleum Institute on Y2K issues related to both the domestic and international flow of oil. Last month, by mutual agreement, the lead responsibility for international oil Y2K preparedness was transferred to DOE.

In this role, DOE will head the International Oil Coordination Council which includes membership from the U.S. Department of State, the National Security Council, the American Petroleum Institute (API), and others. Our coordination with API in this manner is comparable to our coordination with the North American Electric Reliability Council in our lead role on the Electric Power Working Group of the President's Council.

DOE Actions To Date DOE has discussed Y2K extensively with the international oil industry and with major oil producing nations at every opportunity through our bilateral energy policy discussions and other regular contacts. We have also worked to put energy sector (and oil industry) Y2K issues on the agendas of international energy organizations and multilateral energy forums such as the International Energy Agency, the Asia-Pacific Economic Cooperation (APEC) Energy Working Group, and the Steering Committee of the Western Hemisphere Energy Initiative.

The DOE and the Government of Japan also provided the International Energy Agency (IEA)

with voluntary contributions to organize regional seminars on the Year 2000 problem and the oil industry. To date, seminars have been held in Caracas, Venezuela on March 11–12, and in Singapore on March 25–26. A third will be conducted in Abu Dhabi, United Arab Emirates on May 4–5, and more may be held. These seminars are attracting widespread regional government and private sector participation. Mr. William Ramsay from the IEA is here today to discuss the outcome of these seminars.

Also, the Department asked the APEC Energy Regulators Forum to report on the Y2K

preparedness of APEC economies at the meeting of the APEC Energy Working Group in April 1999. In addition, APEC energy ministers instructed the Energy Working Group to prepare actions that may assist member economies and business in the remedial and contingency steps they are taking. (A detailed report, Year 2000 Computer Date Problem Effects on Short-Term Energy Security in APEC Economies was issued this month and is available.)

Current Situation Based on our extensive discussions, data gathering, and monitoring of the Y2K situation in the international oil industry to date, we believe a great deal of progress has been made in key producing countries and in the key worldwide systems and networks of the major international oil companies.

While more needs to be done, and while our information is far from complete, we believe there is room for cautious optimism at this point. Our reasons for saying this are as follows:

The four largest suppliers of imported oil to the U.S. Venezuela, Canada, Saudi Arabia, and Mexico are in the process of converting their systems and expect their petroleum sectors to be fully prepared by the end of the year, and in some cases before.

Kuwait, Norway, and the United Kingdom expect their systems to be fully compliant by the end of the year, and Colombia and Algeria are actively assessing their systems and pursuing remediation efforts.

While less is known about Y2K preparations in other major producing countries (like Nigeria, Angola, Iran and Iraq), major international oil companies operating there (or purchasing there) have system-wide programs in place to counter the Y2K problem and provide for contingency planning.

The petroleum associations from many countries and several of the largest state-owned companies are participating directly or indirectly (through the operating companies) with API in the International Y2K Work Group and the International Oil Coordination Council.

There are several other reasons for our cautious optimism at this point and they include:

The flexibility demonstrated by the oil industry over the years to deal with unforseen circumstances such as accidents, unscheduled down time for strikes, severe weather extremes, natural disasters such as hurricanes and floods, political instability, war, and economic sanctions.

The enormous financial incentive to keep the oil flowing both for private industry and for governments of oil producing countries whose revenues depend considerably on oil.

The flexibility built into the system in the form of commercial and strategic stockpiles of oil and the existence of spare crude oil production capacity in several countries. If one country experiences a problem, another may be able to compensate, or companies could rely on reserves (inventories).

And finally, in the United States we have the Strategic Petroleum Reserve:

The Reserve currently holds an inventory of 561 million barrels of crude oil. If a Presidential decision is made to utilize the Reserve in an energy emergency, that inventory can be withdrawn at a maximum rate of 4.1 million barrels per day.

The Reserve is capable of distributing crude oil by out loading tankers or by intrastate and interstate pipeline systems. The Reserve is connected by pipeline alone to almost 50 percent of the Nation's refining capacity.

The Reserve is Y2K compliant. If necessary, drawdown systems can be operated in a manual mode. The system was designed this way for reasons other than Y2K, i.e., security.

Ongoing Concerns In spite of the reasons for cautious optimism, there are gaps in our information and causes for concern. While we know much more today about the Y2K activities of the major international oil companies and our principal suppliers, much less is known about the Y2K condition of infrastructure that the oil industry is dependent upon in many countries, such as electric power, telecommunications, ports and shipping, and security systems. A failure of any of these systems could affect the oil industry's ability to operate.

Moreover, given that the world oil market today is a global market, tied together by instantaneous trading systems, it is not enough to worry only about countries that export oil to the United States. A disruption of world oil supply anywhere, if uncompensated for, will affect oil prices everywhere. As a rough and ready rule of thumb, the Energy Information Administration, an independent agency within the Department that collects and analyses energy data, estimates that a one million barrel per day loss of supply that is uncompensated for by an increase in production elsewhere or by a drawdown of stocks, and that continues for a year, will cause world oil prices to rise by $3–5.00 per barrel. This translates into roughly 7 to 12 cents a gallon at the pump.

However, if the length of the supply disruption is expected to last no more than a few days, the impact would be much less, if any. An example of this was when a relay station in Iraq used to measure the flow of oil in their pipeline, among other uses, was hit by an Allied attack in February. The inability to monitor the flow of oil removed nearly 1 million barrels per day for a week or so. But since the oil industry correctly gauged the length of the disruption, and there were storage supplies that were available to make up for some of the disrupted oil, there was no notable change in oil prices due to this significant, yet brief loss of oil supply to the world oil market.

Contingency Planning Because of our concerns, we will continue to monitor domestic and international oil developments very closely. We also believe that it is important to keep consumers and the public at large informed with the latest and the best information. A major part of the public information component of our contingency planning will be designed to prevent panic buying that, experience shows, and a self-fulfilling prophecy.

While we see no cause for panic or alarm at this point, consumers who are dependent on oil should always be prudent in planning for their heating requirements, and should not wait until the last minute to fill their home heating oil tanks. Similarly, power generators and large industrial consumers may want to purchase some additional inventory well in advance of the year-end as a contingency or hedge against price increases.

And finally, we will be watching the situation closely and, if circumstances warrant, we will be prepared to sell oil from the Strategic Petroleum Reserve to calm the market.

Thank you Mr. Chairman.

RESPONSES OF ROBERT S. KRIPOWICZ TO QUESTIONS SUBMITTED BY CHAIRMAN BENNETT

Suppliers of Imported Oil

Question 1. You mentioned that the four largest suppliers of imported oil to the U.S.-Venezuela, Canada, Saudi Arabia, and Mexico are in the process of converting their systems and expect their petroleum sectors to be fully prepared by the end of the year. Has the Department of Energy or another independent source verified or seen data that would support this statement?

Answer. Department of Energy's assessment of Y2K preparedness of the petroleum sectors of the four major suppliers of imported oil to the U.S. is based upon a broad range of information gathered from bilateral meetings with the energy ministries of these countries, contacts with the major multinational oil companies that both operate in these countries and are their major customers, discussions in multilateral forums such as the Regional Energy Seminars on Y2K organized by the International Energy Agency, and by reporting from the individual Embassies in these countries. Given national sovereignty concerns as well as individual company proprietary considerations, we are not aware of any mechanism that would enable a systematic independent auditing or verification of Y2K preparedness of the oil sectors in these countries. While we are unaware of any independent audited or verified data on these country's preparedness, all the information that we have received from a variety of independent sources is consistent with our conclusion that they will be fully prepared by the end of the year.

Stragegic Petroleum Reserve

Question 2. The United States Strategic Petroleum Reserve currently holds an inventory of 561 million barrels of crude oil. If a decision is made to utilize the Reserve in an emergency, that inventory can be withdrawn at a maximum rate of 4.1 million barrels per day. How long will it take to begin withdrawing crude oil from the Reserve and how long will it take for the Reserve to reach its maximum rate of 4.1 million barrels per day?

Answer. Under normal conditions, the Reserve is always ready to begin drawdown within 15 days of a declaration of emergency by the President. However, knowing that the current threat will happen at a specific point in time may allow that schedule to be shortened by a few days. We intend to have all physical systems ready to perform before the end of the year, and will be ready to draw down immediately upon notice from the President. Nevertheless, time will be required to receive bids, make awards, and allow buyers to arrange transportation; and the schedule for those activities can only be slightly compressed. It is likely that this activity will take between eleven and thirteen days.

The Reserve can achieve its maximum rate of 4.1 million barrels per day within the first day of drawdown. In the early days of any drawdown the actual rate will depend upon the successful bidders ability to receive and transport the oil. This is generally contingent upon their nominating, and scheduling pipeline, and tank farm capacity as well as in some cases, the scheduling and repositioning of tankers and barges.

U.S. Oil Supply

Question 3. What efforts, if any has DOE made to assess the readiness of maritime shipping and its impact on the oil supply?

Answer. The Department is in close contact with the Department of Transportation, the agency that is in direct discussions with shipping companies and their associations. The Coast Guard is continuing to monitor and report on progress toward year 2000 compliance in the tanker industry. The Department of Energy is deferring to Transportation in assessing the readiness of the industry, however, the Department of Energy is treating a potential maritime disruption as similar to a producer/exporter disruption for purposes of contingency response planning.

Strategic Petroleum Reserve

Question 4. You said that if circumstance warrant, you would be prepared to sell oil from the Strategic Petroleum Reserve to calm the market. Has DOE clearly defined what circumstances or threshold would trigger the selling of oil from the Strategic Petroleum Reserve?

Answer. No, it is has been the policy of every Administration since the creation of Strategic Petroleum Reserve that the Government will not define a disruption threshold or trigger price for activating the Reserve, but will evaluate every disruption based on its unique circumstances.

Oil Market

Question 5. The Middle Eastern oil producing nations are now seriously addressing Y2K and its impact on oil production. Because of their late start, what is the likelihood that we will see Y2K-related disruptions and price fluctuations in the oil market?

Answer. The Y2K remediation and contingency planning programs being implemented by the Middle Eastern oil producing nations and the multinational oil companies that operate there will contribute significantly to reducing the potential for Y2K related disruptions. Oil price fluctuations are an integral part of the oil market day in and day out. Given the flexibility built into the global oil system in the form of producer and consumer commercial stockpiles, national strategic stockpiles, and a relatively high level of spare production capacity in a number of countries, should one country experience a problem, either a normal operating occurrence or Y2K related, the ability to alternatively supply oil from these sources suggest that any price fluctuations will be relatively minor and of short duration.

Oil for Heating

Question 6. You mentioned that consumers dependent upon oil for heating should not wait until the last minute to fill their heating tanks. Can you recommend a particular time frame in which consumers should top off their oil tank?

Answer. Rather than "topping off" their tanks in anticipation of January 1, 2000, we recommend that consumers should follow their customary practices for filling heating tanks. The timing of filling a tank will depend on the size of the tank, the usage rate (reflecting weather), and, in many cases, the contractual fill program they have with their heating oil supplier.

Y2K and U.S. Oil Supply

Question 7. If Y2K is somehow much more severe than is being projected by the oil industry and it produces significant simultaneous problems in multiple production sites. Has DOE developed a policy to respond to such consequences if they begin to impact U.S. oil supply? For example, I would expect that companies would naturally fix their own problems. However, because of infrastructure problems in some nations, companies might require special assistance. At what point does the problem become significant enough to trigger DOE concerns or responses?

Answer. U.S. policy recognizes the best and perhaps only effective way to mitigate the impacts resulting from a severe oil supply disruption is to introduce additional supplies into the market. Should a severe oil supply disruption be caused by Y2K related production or distribution problems the U.S. will be prepared to supplement available petroleum supplies by the sale and drawdown of oil from the Strategic Petroleum Reserve (SPR). A fundamental precept of DOE's energy policy is reliance on market forces to distribute supply. We believe that the most economically and operationally efficient way to distribute oil from the SPR is to allow the companies to exercise their individual preferences. Given the interdependence of our energy market with that of other major oil consuming nations and the fact that the benefits of any individual action taken by the United States will be enhanced considerably by coordination with these nations, a drawdown of the SPR would be carried out in coordination with our allies in the International Energy Agency (IEA).

Refined Gasoline and Fuel Oil

Question 8. If the supply of unrefined oil in the U.S. was completely stopped, how much refined product (gasoline and fuel oil for personal consumption) is in the system and how long would that supply last?

Answer. Products are held in inventory at several locations, categorized as primary, secondary, and tertiary storage. Primary storage inventories are located at refineries, pipelines, and bulk terminals (wholesale marketing facilities having at least 50,000 barrels of storage capacity or receiving products by barge, tanker, or pipelines). Secondary storage inventories are held at numerous bulk plants (smaller storage facilities and receiving products by rail or truck only) and retail establishments. Tertiary storage consists of the inventories held in vehicle tanks, homes, or businesses. Products on the ocean, moving in barges, or in offshore tankage are not included in any inventory category until they reach an onshore location. On the other hand, some portion of inventory is not readily available to meet consumer demand because it is working inventory (tank bottoms, pipeline fill).

Primary storage locations are the source of the weekly, monthly and annual inventory numbers provided by the Department of Energy and the industry. Few estimates of the inventory in secondary and tertiary storage exist. The most recent estimate was prepared by the National Petroleum Council as of March 31, 1988. At that time they estimated that primary gasoline inventory was about 2/3 of total gasoline inventory and primary distillate inventory was about 2/5 of total distillate inventory.

An estimate of the days-of-supply for a given product can be calculated by dividing the usable inventory level at a point in time by the level of demand—(barrels

in primary inventory less some measure of operating inventory) divided by demand (in barrels/day) = number of days. General demand levels for next winter will be a function of the economy and the weather at that time. Inventory numbers will be measured as primary inventory levels next winter. Better forecasts of those numbers should be available next fall. The Energy Information Administration, for example, will release forecasts of demand and supply, incorporating the winter weather forecast as part of the EIA Winter Fuels Conference in October.

A days-of-supply calculation should not be used as an absolute measure of product availability. One concern is that sometime during December gasoline and distillate product will shift from primary to secondary or tertiary storage to an unusual extent if consumers hoard product. In that case, the days of supply numbers would not necessarily reflect true product availability for consumer use. Hoarding could lead to misperceptions of supply as well as contribute to spot outages or price runups in the system.

PREPARED STATEMENT OF BOB MALONE

Chairman Bennett, Members of the Committee,

Good morning. My name is Bob Malone and I am the President and Chief Executive Officer of Alyeska Pipeline Service Company. I am honored to be invited to join you here today to talk about how the pipeline industry is addressing the Y2K problem. I am also pleased to be here to assure you that Alyeska Pipeline Service Company will be ready when the clock turns over to January 1, 2000, and that the Trans Alaska Pipeline System (TAPS) is fully prepared to meet the challenges of the new millennium.

As President of the company responsible for delivering 20% of the nation's domestic crude oil supply, I assure you that we will ready to transport a continuous supply of oil on January 1, 2000 and beyond. The west coast of the United States relies on North Slope crude oil for some 45 to 50 percent of its gasoline supply. We will not let our neighbors down.

Before I speak about the specific steps we are taking to address the Y2K problem, I'd like bring you up-to-date on Alyeska and the Trans Alaska Pipeline System. Alyeska Pipeline is an 800-mile long common carrier pipeline system that transports approximately 1.2 million barrels per day. Alyeska loads an average of 42 tankers per month at our Valdez Marine Terminal, and provides oil spill prevention and response services to the tankers transiting Prince William Sound. Since 1977, TAPS has supplied approximately 20 percent of the nation's domestic crude oil production. Alyeska Pipeline is owned by seven major oil companies, with BP Amoco, ARCO and Exxon holding the majority interest. These companies have been actively supporting our Y2K effort.

Alyeska's Plan for the Y2K Problem

TAPS is a complex system that is critical to our nation's domestic energy supply. We recognize that this vital link must be in place as we approach the Year 2000, and so we have taken the Y2K issue very seriously. We have been actively addressing the potential problem since 1996, to ensure it will *not* be a problem for our customers or consumers of the product we transport. I am confident that *you* will be confident in our ability to transport oil as I share with you our Y2K program.

Alyeska has a comprehensive Y2K program with a clear objective: To ensure that oil continues to flow in a safe and environmentally responsible manner. Our program is being managed with a single point of accountability. Our Vice President and Chief Information Officer, Dave Laurence, is here with me today. The structure I have in place gives me the assurance I need to know where we are, whether we are meeting the deadlines I have set, and what obstacles are standing in the way of our success. It also gives me the assurance to tell you that we are well into the process of having inventoried, assessed, remediated and tested those systems that will ensure our objective.

Y2K History

We started our initial assessment and evaluation of the Y2K problem on TAPS in 1996. This was followed by an assessment of computing infrastructure and key applications in 1997. We used a triage process to categorize systems in terms of mission and business critical functions—those functions that we must be able to perform to operate TAPS safely and reliably with the start of the new year.

In early 1998, we expanded our Y2K program to include control systems, network and communications systems, and vendor readiness. Our program revealed that some of the original systems installed on the Trans Alaska Pipeline System pre-date the Y2K issue, and do not require major remediation.

In excess of 110,000 devices were inventoried as potentially Y2K sensitive on the pipeline and at the Valdez Marine Terminal. One of these, approximately 27,000 devices required detailed assessment. But only a small number of these, 132 devices, required remediation or replacement.

Our control systems inventory found 11 areas that needed remediation. For instance, our Ballast Water Treatment Facility needed upgrades to the control system in order to continue to process ballast from the tankers that call on Port Valdez. We also included a review of our infrastructure providers, such as utility companies, and are working to minimize the degree of disruption that they can cause Alyeska.

In 1999, we have devoted our efforts to finalizing remediation and testing by the end of June. A few systems will require additional work into the third quarter, and our business contingency planning will be complete by the end of November.

We learned that our main concern should be on systems that we installed in the past ten years, and that is where we began focusing our effort. We think in terms of mission and business critical functions—those functions that *must* be able to perform with the start of the new year.

Our team consists of 70 people devoted exclusively to the Y2K issue. They, in turn, are supported by many of the 900 Alyeska employees who work on TAPS. We have teams in operations and engineering to ensure that the crude oil continues to flow. Other support teams are working on issues like safety, security and environmental protection. We are also actively sharing information and lessons learned with our owner companies.

We estimate that the final Y2K cost for TAPS will be in the $30 million range. It is money well-spent to provide assurance to the country that we are in a good position today because we have dedicated the necessary resources to responding to this problem.

Alyeska's Y2K Program

Alyeska decided early in the planning process that in order to ensure our success we would follow the industry standard methodology. Therefore, the program I'm about to describe is similar to that of other pipeline and oil facilities. It involves three major steps:

- Assessment of the system, which includes taking inventory and evaluating what remediation is necessary.
- Remediation or replacement, which includes testing the fixes and changes that have been made.
- Contingency Planning, which will further reduce the risk of a problem.

Assessment

At Alyeska Pipeline, our initial assessment was thorough and complete. Every system of the pipeline, terminal and our tanker escort system was analyzed to determine the work that was necessary to ensure safe, reliable oil flow. As we have remediated, we continue to re-assess our earlier assumptions and findings. And we have found that we have done the right work at the right time. Some of the larger systems we've addressed include:

- Communication and Control Systems, which include our Operations Control Center in Valdez and our communications with remote gate valves.
- Mainline Turbines and Pumps that keep the oil flowing.
- Leak Detection System, which helps us determine if there is a leak in the system.

Remediation

Like many others in the oil industry, Alyeska has complex, inter-related systems that require detailed remediation. Our remediation efforts have included everything from re-coding of software to address the double zero date, to changes in hardware such as the programmable logic controllers that monitor security at four critical river crossings. As the Y2K Team replaces one system or device, the inter-dependent systems related to that device have to be re-tested. With each fix we make, we look up and down that system to ensure overall success. We only consider remediation complete when we have completed testing of the fix and the inter-related systems.

You will find it reassuring to know that over 90% of our mission-critical system work will be complete by June 30, 1999. Our business-critical systems, such as our payroll system, will be complete by September 30, 1999.

Contingency Planning

Our efforts are now focusing on completing our contingency planning, which is an essential step in the Y2K preparation effort. This planning will minimize the risk in the event that we do experience Y2K failures in our mission and business critical systems. We are working in three major areas:

- Assessment of individual operational assets and support groups.
- Evaluation of company-wide operations, business functions and key vendors.

• Development of mutual understanding and agreements with external stakeholders and third parties on how to respond and recover from Y2K failures. For example, we are working with the oil producers on the North Slope, the shipping companies that operate tankers in Prince William Sound, our regulators, such as the U.S. Coast Guard, and our critical vendors.

Our plan will assure continuity in our operation and address any possible failures. For instance, we may stage individuals at areas of high risk along the pipeline system where they will be able to manually operate key systems. We are mobilizing our Incident Command System, which is a well-oiled team of people who handle emergencies along the pipeline system. Key Alyeska leadership will be on site and prepared to respond as many around the world are celebrating the new century. Alyeska Pipeline, as operator of the Trans Alaska Pipeline System, will be ready to assure the flow of oil from the North Slope of Alaska to Valdez and the lower 48.

Domestic Pipeline Readiness

I'd like to say a few words about the other pipelines across this nation that are critical links in our domestic energy supply. As a member of the Association of Oil Pipe Lines (AOPL), I can assure you that the companies who operate the vast network of pipelines across this nation are ready for the Year 2000. AOPL is a trade association of common carrier oil pipelines whose members transport over 80 percent of the crude oil and petroleum products that travel by pipeline in the United States. We have coordinated our effort to ensure success to all sectors of the pipeline industry. Our approach has been three-fold:

• Senior level sponsorship and commitment that ensures commitment at all levels in the organization.

• Business ownership and accountability, from the top down through all the functional areas, including the information systems experts.

• Tight management within the corporate environment using normal business processes.

The pipeline industry has relied on alliances to address the Y2K problem. For instance, AOPL has held workshops each year for the past three years to educate and share information about Y2K efforts. As a member of the American Petroleum Institute, the trade association that represents 400 oil and gas companies, I am aware of the Y2K task force that has been in place since 1997 to assist the industry. This sharing of information allows each one of us to educate others about the lessons we have learned as we remediate and test our systems. As an industry, we have replaced equipment, rewritten computer programs, tested components of our system and developed contingency plans so that we are prepared.

AOPL has been conducting surveys of the industry to determine if concern exists as we move toward the end of the year. These can be categorized in three areas:

• Vendor issues, such as concern over software and system certification.

• Resource issues, such as a lack of people and funding.

• Supply chain issues, such as the readiness of customers and suppliers.

These three issues lead me to make this final point about the industry in general—We can ensure that we are prepared, and we can ask others to prepare as well, but in the end a small risk exists. Let me assure you that in the unlikely event that a problem occurs, the pipeline industry is ready, willing and able to handle it.

CONCLUSION

In closing, I want to state again that Alyeska Pipeline has anticipated the problem, remediated the problem and we are prepared. We have engaged highly talented people and have allocated the necessary resources to tackle the Y2K challenge. I can assure you that we are taking the necessary steps to have the Trans Alaska Pipeline System ready for the transition into the year 2000. When the cold and darkness of December has settled on Alaska, at Alyeska we will be warm and confident in our ability to handle the final crisis of the century.

RESPONSES OF BOB MALONE TO QUESTIONS SUBMITTED BY CHAIRMAN BENNETT

Question 1. What degree of confidence do you have in the ability of local supplier utilities to Alyeska to be up and running in the Year 2000? And what does this mean for other Alaskans who may be in need of the services of those utilities?

Answer. We have carried out a detailed evaluation of all our mission and business critical utility providers. Based on the information we have obtained on them through correspondence, telephone conversations, research on the Web and other public sources, we have established an acceptable level of confidence that they will be Y2K Ready. Not withstanding their commitment and efforts to become Y2K

ready, we are in the process of developing contingency plans that assume some level of failure and disruption to their services. Where appropriate we will develop joint contingency plans with utility providers. With respect to power supplies and communication systems, we have adequate independent back up systems that mitigate most utility failures.

Question 2. What effect could the failure of any governmental systems upon which you rely have on your readiness for the year 2000?

Answer. Failure of some governmental systems could have a serious impact on Alyeska. Our primary area of concern is with the Coast Guard who are in the process of completing Y2K evaluations, remediations and replacements of navigation and communications equipment in Prince William Sound. Their failure to be Y2K Ready could seriously impact the safe movement of oil tankers entering and leaving Prince William Sound.

Other governmental failures that could impact Alyeska include systems used by Federal and State agencies in the Joint Pipeline Office (JPO) that provides oversight of the Pipeline. These agencies, including the Department of Transportation, are responsible for issuing permits and other notices to Alyeska for regulated activities. Our internal contingency planning efforts include developing joint plans with the JPO to ensure emergency response and recovery work can be carried out without unnecessary delay. The failure of any emergency services (911), emergency response organizations and other governmental groups involved in Mutual Aid services pose some risk to Alyeska and the Alaskan community as a whole.

Question 3. Have you hired an IV & V contractor?

Answer. Alyeska has chosen **not** to employ an Independent Validation & Verification (IV&V) contractor to review its Y2K work. Alyeska's Y2K program incorporates the checks and balances of external review through its resourcing strategy for its Y2K Team and its regular interactions with the Pipeline Owners. It is normally only beneficial to consider using a IV&V contractor when a Y2K program is internally driven by employees both during the development and implementation phases of the work. Alyeska took a different approach by developing and implementing its Y2K program using multiple external contractors engaged in Y2K work programs with other major oil companies. This enabled us to learn from others mistakes and ensured that the methodology we adopted was well proven across industry. Our Y2K implementation team had a peak of 70 full time staff who predominantly came from specialized contracting organizations supporting Alyeska's business. We also adopted a philosophy of peer review with our Owner Companies and have actively exchanged information and experiences during each phase of our program.

Our Contingency Planning program has been implemented a little differently. It is essential that the process of Contingency Planning is owned and implemented by our internal organization because they fully understand our operational, technical and business functions. However, we are using limited external resources to help develop, manage and coordinate our program, and to help facilitate resolution of issues that cut across asset boundaries.

Question 4. Are there any plans for end-to-end testing either within your system or across system lines?

Answer. Whenever possible, we are conducting end to end testing of complete systems including the full integration testing of applications on our enterprise server. Often it is technically difficult, or impossible to conduct date roll over tests on controls systems that do not have a master clock to input a date change. We have a team of engineers devoted to conducting system integration and interface tests. They are specifically targeting systems that have distinct interfaces between different technologies such as the hardware and software found at interfaces between traditional IT and controls systems.

Question 5. On page 5 of your testimony, you state that "the vast network of pipelines across this nation are currently ready for the Year 2000." Does that mean they are currently ready or that you are confident that they will be ready? What empirical information can you provide the committee that supports your view of the industry's condition?

Answer. Based on recently compiled industry survey information, oil pipelines have generally completed testing and remediation of Year 2000 related problems on their systems and are focusing on their contingency plans and coordination with their suppliers and customers. The industry survey indicates that pipelines—both oil and gas—will be ready for 2000 well before the end of the year. Pipelines are, in fact, in the final stages of their Y2K readiness programs for all phases of their operations. They are also making sure that infrastructure providers, such as telecommunications and electric power, will also be ready on January 1. While the interdependencies with telecommunications and power suppliers could potentially

cause problems, redundant computer systems and communications paths permit simulation and testing.

Question 6. Could you provide the Association of Oil Pipe Lines' surveys for the record of this hearing?

Answer. The oil industry Year 2000 Readiness surveys are not in the possession of Alyeska Service Company nor is Alyeska privy to the individual survey information. The oil pipeline industry surveys were collected and assimilated by the American Petroleum Institute as part of its cooperative effort with the President's Council on Year 2000 Compliance to assess oil industry preparedness. Each oil company, including pipelines, submits the survey information to API on a confidential basis. We understand that once the survey information is assimilated into the API database, the individual surveys are not retained.

PREPARED STATEMENT OF REAR ADMIRAL GEORGE N. NACCARA

Rear Admiral George N. Naccara
Director of Information and Technology
United States Coast Guard

Rear Admiral George N. Naccara assumed his current position as Director of Information and Technology of the Coast Guard in June 1997. A graduate of the U. S. Coast Guard Academy in 1969, Rear Admiral Naccara served at sea for nearly six years including assignments as Executive Officer and Commanding Officer aboard Coast Guard cutters. He has served in Marine Safety Offices in Baltimore, Maryland and Hampton Roads, Virginia. He has also had tours of duty in the Merchant Vessel Inspection and Merchant Vessel Personnel Divisions in CG Headquarters.

Rear Admiral Naccara completed recent assignments as the Director of Field Activities, Marine Safety and Environmental Protection, Deputy Chief, Office of Marine Safety, Security, and Environmental Protection, Chief of Operations of Coast Guard Atlantic Area, and Executive Assistant to the Commandant from 1991 to 1994. He has earned a Master's Degree in Business Management from Central Michigan University and was a Harvard University research fellow from 1990-1991.

Rear Admiral Naccara's military awards include the Distinguished Service Medal, the Legion of Merit, the Meritorious Service Medal (Operational Device, two awards) and the Coast Guard Commendation Medal (three awards).

Good afternoon, Mr. Chairman and distinguished members of the Committee. I am Rear Admiral George Naccara, the Coast Guard's Chief Information Officer. I have responsibility for the Coast Guard's Year 2000 (Y2K) project.

The Coast Guard is certainly aware of the potential for disruption posed by the so-called millennium bug, both to Coast Guard readiness and to all segments of the marine transportation system (MTS). The Coast Guard is working diligently to ensure its own information technology systems are prepared for the millennium, since

an important component of the Y2K readiness of our domestic ports will be the readiness of the Coast Guard to respond to any disruptions that may occur. Our motto is "Semper Paratus"—Always Ready—and therefore, we must similarly ensure that the systems and equipment with which we deliver our marine safety, environmental protection, search and rescue, and maritime law enforcement services to the public are also ready.

We are also keenly interested in the Y2K readiness of the industry we regulate. We have been working intensely since our first Y2K Conference with the Maritime Association of the Port of New York/New Jersey in February 1998 to alert all segments of the MTS industry to the threat of Y2K. I will address a number of the awareness-building measures we have taken specifically a bit later. Concurrent with our awareness-building initiatives, we have focused our attention on assessing the Y2K readiness of the MTS, both ships and ports, domestic and international.

Needless to say, the companies that transport, store, refine, and pump oil play a prominent role in both these realms. To gain a better understanding of their readiness, we have engaged with a number of them directly, and in some cases through their representative trade associations. We have shared the podium at a number of conferences with several of them, including organizations represented here at this table. What we have learned from them is that, as in other industries, larger and well-resourced companies take Y2K very seriously, have robust Y2K projects in place, and expect to be ready for the millennium. In particular, large, horizontally integrated oil companies have demonstrated very comprehensive Y2K projects, including thorough contingency planning. In a recent Lloyds of London Press survey of about 4,500 shipowners/operators and port authorities/operators resident in 40 countries, 80–90 percent reported awareness of the Y2K problem; 50 percent expected to be Y2K-ready by the end of the second quarter of 1999, with the balance ready by the end of the year.

While this news appears to be good, in a fragmented industry it is very difficult to assess whether progress is meeting projections, and whether optimism is justified. Significant unknowns remain—the degree to which the embedded chip problem on ships will cause disruptions, for example. At a conference sponsored by the International Energy Agency which I attended in Caracas, Venezuela, I heard troubling assessments of the Y2K readiness of other parts of the infrastructure that support ports and facilities in Central and South America, such as power and communications. Since Venezuela is the largest supplier of foreign oil to the United States, I take these concerns seriously, and they lead me to conclude that we must continue to push all stakeholders in the MTS to continue working, testing, and contingency planning.

I mentioned that the Coast Guard and others are taking measures to help prepare the industry for the Year 2000. These measures include the following:

- An aggressive Coast Guard Y2K awareness campaign, which has included conferences and industry sessions on three coasts, the Great Lakes, and the inland rivers; and the distribution of over 50,000 Y2K brochures, which contain information, Web sites, and an (800) number, to ships calling at U.S. ports. Also, I have attended a large number of speaking engagements in both domestic and international locations. These efforts are ongoing; in fact I was to have addressed the National Association of Waterfront Employers in Bermuda this morning—this has been rescheduled to tomorrow morning.
- A Coast Guard study of the best Y2K readiness practices in the 48 major inland and coastal ports in the United States. These practices will be shared widely among all the Coast Guard Captains of the Port, as well as with MTS stakeholders around the country. The study includes a highly flexible risk assessment matrix that the Coast Guard and MTS stakeholders can use to assess their own or their partners' Y2K readiness.
- A speech I presented on the international MTS to 120 national Y2K coordinators at a Y2K session at the United Nations (UN) on December 11, 1998. Among other issues, the speech directed delegates' attention to the vulnerability of the international oil transport industry to Y2K disruptions. This speech led to the Coast Guard being asked by Mr. Koskinen and Ambassador Kamal of the UN to lead an international effort to address the Y2K readiness of the global MTS. The result was a March 3–4 meeting of 16 international MTS trade associations at the headquarters of the International Maritime Organization (IMO) in London, jointly sponsored by the U.S. Coast Guard and the UK Maritime and Coastguard Agency. In preparation for the meeting, representatives from nine of the trade associations, including Intertanko (which represents 75 percent of the world's independent tankship operators), met and drafted a Year 2000 Code of Good Practice for the MTS. After modifications by the meeting attendees (including very essential contingency planning guidance and a list of ship and port-critical systems that I urged them to add),

the Code was issued immediately by the IMO as IMO Circular 2121. It is the intent of the Coast Guard and the IMO that the document will become the basis for Y2K information exchange, assessment, risk management, and enforcement policies by ships and ports worldwide. It must form the template for flag state and port state enforcement efforts to ensure consistency among nations.

- The May 1999 meeting of the Maritime Safety Committee of the IMO will focus on IMO Circular 2121, and its implementation worldwide as the standard for Y2K risk assessment and enforcement. It should be noted that both the IMO and the U.S. Coast Guard are urging cooperation on the adoption of the IMO Code, but have no power to enforce its adoption internationally, as we are dealing with sovereign states and a large percentage of foreign flag vessels.
- One June 21 and 22 there will be another meeting at the United Nations of the national Y2K coordinators, with a focus on all segments of the world economy, including in the Y2K readiness of the international MTS. At that meeting, the Coast Guard will not only urge worldwide acceptance of the IMO document as the basis for Y2K policy by port state control states, but will also distribute its own Y2K enforcement policy and the Port Operations Y2K Guidelines. The guidelines, which include the risk assessment matrix, will go hand-in-hand with the IMO Code to assist states to address their ships' and ports' Y2K readiness.
- The Coast Guard is providing a representative to several international forums on a range of Y2K issues, including an Asian Pacific Economic Cooperation (APEC) symposium in Singapore, an International Telecommunications Union (ITU) global cross-sector meeting in Geneva, an African regional Y2K conference, the second South American Y2K forum here in Washington, D.C., and an International Energy Agency-sponsored Middle East/Africa oil seminar in Abu Dhabi, United Arab Emirates.

I have been asked to offer an assessment of areas around the world where Y2K problems may impede the steady production and transport of oil. Clearly, others seated here at the table are better qualified to address the issue of production. Regarding transport, let me make two points:

- The Gartner Group and the Department of State have both published unclassified regional and economic sector assessments of international Y2K readiness. The CIA has also done some assessment studies, which are classified. These studies permit some inferences as to what regional Y2K impacts on the MTS might be, with the caveat that the MTS is a global industry in which the readiness of MTS companies is not always the same as that of the countries in which they do business. I will not attempt to review these regional findings here, as they are readily available. Nevertheless, I want to stress that the oil transport companies will be subject both to the uncertainties of the embedded chip problem on ships and in ports, and to a range of potential disruptions in the interlinkages of the industry with supply chains and supporting infrastructures.
- Despite these cautions, the Coast Guard is actively trying to improve its data on the international readiness of the MTS. We are currently partnering with the United States Transportation Command in a data gathering effort on the Y2K readiness of over 50 key international ports and critical choke points. We hope to have considerable data on these ports collected and analyzed by summer, which will give us a reasonable picture of global readiness in the MTS. This will allow time to take corrective measures, or further develop contingency plans.

I have been invited to comment on actions the Congress or others should take to address Y2K issues impacting the importation of foreign oil. It would seem prudent for Members of Congress to join with all those concerned about fuel supplies in taking a message of caution to the American public, caution against hoarding petroleum products, or topping-off tanks a day or two before the century change, as we understand that that act alone, repeated nationwide, could lead to shortages. To assist the Coast Guard in its preparations for Y2K, I would also appeal for mindfulness regarding the tremendous amount of information being requested from us on a near-daily basis.

Thank you for the opportunity to appear before you today. I will be happy to answer any questions you may have.

RESPONSES OF REAR ADMIRAL GEORGE N. NACCARA TO QUESTIONS SUBMITTED BY CHAIRMAN BENNETT

Y2K ENFORCEMENT POLICY

Question 1. You stated that the Coast Guard will disseminate its Y2K enforcement policy this coming June at the United Nations Y2K coordinators meeting. It's

good to hear that the Coast Guard will put out a definite policy on this topic. Are similar policies being issued to your knowledge elsewhere in the world? If so, are there emerging problems with policy differences that may interfere with shipping? If there aren't any such policies, what is that telling us about the preparations at foreign ports?

Answer. The U.S. Coast Guard and the United Kingdom Maritime and Coastguard Agency co-hosted a meeting of 16 international maritime trade associations at the Headquarters of the International Maritime Organization (IMO) in London on March 3 and 4, 1999. The meeting produced a Year 2000 Code of Good Practice for the Marine Transportation System (MTS) that was promptly issued by the IMO as IMO Circular Letter 2121. The Code contains questionnaires for the exchange of Y2K readiness information between ships, ports, and terminals, as well as contingency planning guidance, and lists of critical systems for ships and ports. The intent of the U.S. Coast Guard and the other participants at the meeting is that the Code will become the basis for a consistent international approach to vessel entry and risk assessment during critical Y2K periods. The U.S. Coast Guard enforcement policy to be issued by the end of June, and published shortly thereafter in the Federal Register, will be closely aligned with the IMO document. We have been encouraged to hear that the Canadians will closely align their policy with the IMO document, and the Australian government has actually retracted earlier policy pronouncements and reissued their maritime Y2K policy, closely aligning with the IMO document. We do not have a complete list of other nations' policies at this time, but we anticipate that most, if not all, maritime nations will follow suit. To further this trend and offer practical guidance in the implementation of the IMO document, the U.S. Coast Guard exercised its approach with some commercial shipping lines and the Port of Los Angeles/Long Beach on June 14 and 15, 1999. The results will be compiled into a "template" to be distributed to national Y2K coordinators at the United Nations on June 23, 1999.

LLOYD'S OF LONDON PRESS SURVEY

Question 2. You referred to the Lloyd's of London Press survey of 4,500 ship owners and operators. As you are well aware, there haven't been many incidents in the past of false reporting and mis-certification in the maritime industry. It has often been that certification was available for a fixed fee and incidents have occurred with property loss and environmental damage. You said yourself that this is a fragmented industry that is difficult to assess. How much confidence should we put in this survey? Is there any way to check or verify even a sample of the results? Do you have suggestions in this regard?

Answer. The value of such surveys may be limited. We have learned that legal and public relations concerns have diluted the value of self-reported Y2K readiness information. Nevertheless, we do feel that the Lloyd's survey (and others conducted by industry associations like the International Chamber of Shipping (ICS) and the American Associations of Port Authorities (AAPA)) reflects that the majority of the industry is seriously addressing the Y2K problem. Our many contacts with major companies and trade associations in the industry confirm this. Though the responses tell us less about small and medium size companies, we recognize that size is not automatically a factor in how seriously the Y2K issue is being addressed. The U.S. Coast Guard cannot directly validate the survey results. However, the U.S. Coast Guard is continuing to collect data about the readiness of U.S. ports and companies, as well as the major stakeholders in the ports. Further, we are gathering information available from other government sources about the readiness of the global industry.

ASSESSMENT OF KEY INTERNATIONAL PORTS

Question 3. You mentioned that the Coast Guard and the U.S. Transportation Command are assessing the readiness of 50 key international ports and expect the analysis to be done this summer. This will allow time to take corrective action and develop contingency plans. Would you please describe typical corrections that could be taken with regard to a foreign port? Also, what would be contained in a business continuity and contingency plan such as you referred to? Is there enough time remaining to accomplish this?

Answer. There is little the United States or the U.S. Coast Guard can do to directly correct Y2K problems in foreign ports. However, we have been working with other key stakeholders in the international Marine Transportation System (MTS) to achieve a cooperative approach to making a global industry Y2K-ready. Our program to assist foreign ports has three major components:

Outreach. Planned speaking engagements, both in this country and abroad, to international organizations, such as the International Energy Agency, the American Association of Port Authorities, and the Western Hemispheric Transportation Sector Regional Work Group. These presentations will strongly urge all MTS stakeholders to continue preparing their own technology for Y2K and to work with other stakeholders in all ports, domestic and international, toward a maximum state of readiness for potential Y2K disruptions.

Establishment of an international standard for ship/port communications and Y2K risk assessment. This important initiative culminated in the Year 2000 Code of Good Practice, International Maritime Organization (IMO) Circular 2121. Issuance of this document by IMO to the member nations will raise the visibility of the Y2K and contribute greatly to a balanced, consistent approach to the communications, risk assessment, and contingency planning needed on the part of all maritime nations to minimize disruptions to global MTS commerce.

Contingency Planning. Effective contingency planning is a strong and constant theme in U.S. Coast Guard presentations, as well as in virtually all presentations given by other organizations at international meetings on Y2K. Effective contingency planning is needed as the most effective antidote to foreseeable disruptions in the MTS due toY2K. The U.S. Coast Guard has continued to advocate strongly for a focus on contingency planning in all public statements about Y2K, and in most of its published Y2K materials.

The above program components represent ongoing corrective measures that apply to the entire international MTS. If assessment information on international ports reveals particularly insufficient progress in Y2K preparations in some country, affecting the readiness of their ports, action can be taken to assist them. Numerous organizations, ranging from the State Department, to the World Bank, to the international MTS trade associations, to the U.S. Coast Guard, can assist with professional advice, model contingency plans, risk assessment tools, even financial assistance to help them with their preparations, which at this late date will be primarily focused on contingency planning.

It is unrealistic to give an adequate description of such a Business Continuity and Contingency Plan (BCCP). However, the U.S. Coast Guard has now submitted its own BCCP to the Department of Transportation. Though the document is U.S. Coast Guard specific, much of the information, particularly the planning principles and assumptions, has universal application.

Clearly, there is time enough remaining to accomplish BCCP planning and to design plans that will ensure the continuity of core business functions of any organization in some manner.

Y2K PROJECTS FOR SMALL COMPANIES

Question 4. You mentioned that "large and well-resourced companies take Y2K very seriously, have robust Y2K projects in place, and expect to be ready for the millennium." What about smaller and less-resourced companies? Even if they are not critical to the supply of oil, they certainly can do a lot of damage when they have an accident.

Answer. The international Marine Transportation System is a tremendously interlinked industry and we acknowledge that very small participants can play pivotal roles. Failure of a small supplier to a pipeline company might conceivably halt operations of a pipeline, which in turn could back up tankships in a port. And, of course, a small petroleum company could have a serious spill. To date, we have only anecdotal information about smaller companies and this limited information reveals that some companies have made serious efforts to address their Y2K issues, while others have adopted a "fix on failure" approach. For this reason, the U.S. Coast Guard has:

a. Urged companies individually to communicate with their key business partners, large and small, not only to ensure that they are making serious preparations for Y2K, but to ensure that their own contingency plans provide for alternative methods of obtaining the services that these partners provide, should they become unavailable.

b. Directed Captains of the Port to foster the formation of local and regional Y2K readiness committees, made up of key stakeholders, who will work together for the overall Y2K readiness of the port.

c. Directed Captains of the Port to assess the Y2K readiness of companies doing business in their port zone. Should they determine that any company, large or small, appears to have made insufficient preparations for Y2K and may present a risk to the environment, they will assess this risk using the U.S. Coast Guard Y2K

risk assessment matrix. If necessary, they may then take appropriate measures to have the problem corrected, or place limitations on the operations of the company.

PREPARED STATEMENT OF WILLIAM C. RAMSAY

Introduction

Mr. Chairman, thank you for the opportunity to speak before this Committee about the implications of the year 2000 problem for the international oil industry.

The Paris-based International Energy Agency (IEA) is an intergovernmental body within the framework of the Organization for Economic Cooperation and Development (OECD). It carries out a comprehensive program of energy security and policy cooperation among its twenty-four member countries, which include the United States, Canada, Japan and the countries of the European Union. I am the Director of the Office of non-Member Countries, which handles relations with non-OECD countries, especially those large energy producers and consumers that can have an impact on the world oil market and thus on the energy security of our members.

In October 1998 our member countries gave the IEA Secretariat a mandate *to examine the possible impacts of the year 2000 problem on the oil industry and the implications for the energy security of IEA member countries*. (Most IEA member countries are net oil importers.) The US Department of Energy can be credited to a large degree for encouraging the IEA's increased effort on Y2K, both substantially and financially. The government of Japan has provided additional financial support.

I will first describe the IEA project, then cover what we have learned from it so far.

Awareness Raising and Information Gathering

The IEA year 2000 project in the oil sector has two main components: 1) awareness raising, and 2) information gathering

The IEA is pursuing the "awareness raising" component by organizing a series of seminars in several of the world's most important oil producing and refining regions. The seminars bring together year-2000 coordinators and other officials from governments, oil companies and the infrastructure providers on which the industry depends (such as electricity grids, pipelines, the shipping industry and ports), with the aim of raising awareness of the problem and facilitating the sharing of information, experience and ideas about solutions. Both remediation and contingency planning are covered, though there is an emphasis on the latter.

We have made a special effort to include the large state-owned oil companies from developing countries—which account for a large part of the world's oil production—while participation by the major international oil companies helps promote a cross-fertilization of experience and ideas.

By raising awareness and providing a forum for the exchange of information, the IEA hopes to prevent at least some possible oil market bottlenecks related to the year 2000 problem.

- The first seminar was held for the Latin America region on 11–12 March in Caracas, Venezuela. It was attended by representatives from about a dozen countries, including a broad range of Venezuelan state and joint venture producers. The meeting was co-hosted by the Venezuelan state oil company, PDVSA.
- The seminar for the Asia-Pacific region took place on 25–26 March in Singapore. It was also attended by representatives of about a dozen countries and was held with some assistance from ASCOPE, the ASEAN organization of state oil companies.
- The third seminar, which will cover the Middle East/Africa region, is scheduled to take place on 4–5 May in Abu Dhabi, and will be co-hosted by the Emirates Center for Strategic Studies and Research.
- We are examining the possibility of holding a fourth seminar for Europe and the former Soviet Union.

The second aspect of the IEA's project is information gathering and source identification. This is facilitated significantly by the seminars, which bring together some of the major players on the international oil market.

The objective of our information gathering activity is to be in a position to advise our member governments what action, if any, collective or individual, they should take in response to the possible threat posed by the year 2000 problem in the oil sector.

In order to draw conclusions about the possible effects of the year 2000 problem in the oil sector, we have been trying to develop an aggregate picture of the situation. Too few people are looking at the cumulative effect of small probability events across sectors on collective activities. This is probably because everyone, understandably, is more concerned about their own micro-situation; and to the extent that they look beyond this, it is generally only to suppliers and infrastructure providers upon which they directly depend. However, it is the aggregate result that will effect the oil market. Thus the IEA, which is mandated by its members to look after energy security, may have a unique role to play in trying to develop an appreciation for this aggregate picture.

Drawing a macro picture requires piecing together the various micro pictures along the supply chain and across companies and regions. This is extremely difficult because the micro information is scarce and very often unreliable. We have found that many of our target companies are reluctant to share a lot of meaningful information because many of them are concerned about the legal and commercial implications of doing so, or about their national image of reliability. Nevertheless, after two seminars and discussions with various participants in the oil industry and in the support industries on which it depends, we have come to some preliminary conclusions, which we plan to refine over the next few months.

Preliminary Conclusions

- As in other industries, Y2K is not just an IT problem. For one thing, in the technologically advanced oil industry, it is less of a computer problem than one of microchips embedded in industrial equipment used for production, transportation, monitoring and control. And since there are so many chips (a typical oil platform has 10,000), companies must make a business decision on how much effort to put into remediation and then to prioritize their search and replacement activities based on the criticality of systems to the supply chain. As in other industries, this means Y2K is a *management problem*.

- The good news is that, after exhaustive testing, a number of oil companies say they have found *fewer problems at critical points than anticipated*. But it still takes as much effort to find one critical problem as it does to find 10. Fortunately, less advanced companies can learn from the experience of companies that are farther ahead. The American Petroleum Institute (API) maintains a data base of equipment its members have found to be Y2K compliant and non-compliant. We would encourage the API in its recent efforts to provide access to this data base to non-API members. This could help some companies save a considerable amount of time re-checking components already tested by the major international companies. Even if companies do not have time or resources to replace many of the defective components identified, they can at least have a better idea about where problems are likely to occur, and this could aid them in their contingency planning.

- Low oil prices have been a particular burden for oil companies. Although we do not have evidence that this has caused firms to cut Y2K budgets, there is reason to believe there will be pressure to spend less.

- As a general rule, the *state oil companies—especially those in developing countries—probably lag the majors* in addressing the problem. A number have openly stated to us that they only began seriously looking at the problem around mid-1998, while most majors started some two years earlier. However, the largest state-owned companies, which supply most of the oil imported by the US, generally started somewhat earlier and appear to be more advanced. Contacts with Saudi Aramco and PDVSA in particular lead us to believe that these key suppliers to the US market take their preparations quite seriously. Obviously, many oil producing countries outside the OECD rely so heavily on oil for their national revenue that they have considerable incentive to look after their industry. Although most governments understand this imperative, it is not yet clear to us whether all are taking or are capable of taking the necessary action.

- Most oil companies probably have a *fair chance of handling the major Y2K problems in their own organizations*. This is because oil companies are used to contingency planning, especially in the third world. Moreover, some of the less advanced state-owned oil companies are less dependent upon technology prone to year 2000 problems.

- Similar to the situation in other industries, what could be a greater threat to the oil industry is *breakdown in infrastructure outside oil companies' control*, for example, in electricity grids, telecommunications and shipping. Such service infrastructure risks are probably more pronounced in less developed countries, though as stated before, are mitigated somewhat by less dependence upon Y2K-prone technology and greater experience in contingency planning from having to deal with it

on more of a daily basis. There is also some concern about the large amount of "outsourcing" for various services, which has increased in recent years. Many oil service companies are small or medium-sized enterprises, and it is generally believed that SMEs are more likely to lag large companies in Y2K preparations.

- Oil companies have learned from Y2K gaming exercises that *a few minor glitches can compound to create bottlenecks*, and that what starts as a minor Y2K glitch can cascade into conventional failures. Moreover, the likelihood of this happening is aggravated by the fact that such glitches could occur simultaneously. Flexibility in contingency plans will be crucial. Although one may never face the situation simulated, *simulation exercises undoubtably make contingency plans and teams more flexible*. Unfortunately, it appears that only some of the majors are now at the point in their Y2K programs of engaging in simulation exercises.

- The *duration of any overall disturbance is unclear*. Though fortunately, unlike the electricity sector, the oil industry does not operate in "real time", and therefore has some margin to bring things back to speed. One of the reasons for this is that there is generally a large amount of oil in storage and en route, and there is currently a fair amount of surge capacity among producers. According to some experts we have talked to, knock-on effects of Y2K in the oil industry could last into Q2 as problems compound down the supply chain over time. Although such problems are likely to be mostly in the area of delayed shipment and payment problems, they could still affect oil supplies and markets.

- The *oil market effect of Y2K is uncertain*, especially since Y2K effects on the world economy could lower energy demand. However, the oil market actually acts upon the *expectation* of supply and demand. This means that any nervousness in oil markets about the availability of oil due to year 2000 problems could lead to an increase in demand in the run up to the year 2000 because of stock building, including down to ordinary citizens filling jerry cans with gasoline.

I might add that IEA governments, with the participation of a number of oil companies, are planning a test of their emergency response mechanism, simulating a response to possible Y2K-related disruptions. We are now planning such scenarios.

The IEA will be refining its conclusions over the course of the year and provide updates to its member countries.

We cannot speculate at this time on whether there is anything the IEA might do collectively, for instance, in an effort to calm markets or respond to supply disruptions. Our concern is that, unless carefully orchestrated, any such efforts can just as easily have the opposite effect on market attitudes if our preparations are read as a clear indication that there is a serious problem, perhaps perversely stimulating consumer disquiet. It may well be that national level public information would be more effective in this case. IEA Members will consider what measure might be appropriate either collectively or individually. As a first step, Ministers of energy from the 24-member countries of the IEA will address Y2K issues at their bi-annual meeting in May.

Our efforts over the next weeks will be directed at identifying how we might structure a fourth seminar to address the various operating entities in the oil sector of Eastern Europe and the former Soviet Union. As our efforts progress in looking for the weakest links in the oil supply chain, we are increasingly alert to non-oil "real-time" phenomena which could seriously impede energy delivery systems, such as electricity and gas. More of these considerations will figure in our fourth seminar.

Finally, I would like to direct your attention to the IEA's web site, which contains pages on the year 2000 problem. These provide information on our seminars, IEA work on the year 2000 problem in the oil industry, and hyper-links to many relevant web sites dealing with this issue. The IEA's web pages on the year 2000 problem in the oil industry may be found at: *http://www.iea.org/ieay2k/y2khome*

Thank you Mr. Chairman.

RESPONSES OF WILLIAM C. RAMSAY TO QUESTIONS SUBMITTED BY CHAIRMAN BENNETT

Question 1. You mentioned that the American Petroleum Institute (API) is maintaining a database of equipment that its members have found to be either Y2K Compliant or non-Compliant. You say the International Energy Agency is encouraging API to make this database available to non-members.

Would you be more explicit about why you think this is not happening? Are there steps that can be taken by the Administration to open up this information? What steps could Congress take to make this information more available?

Answer. . . . *"We would encourage the API in its recent efforts to provide this database on a more general basis beyond API members if they can . . ."*

The API operates a membership system that was in place before Y2K became an issue of general concern. We are aware that they have already made efforts to extend the availability of this database to non-members, but they quote a fee of U.S. $6000 for the privilege. Free access or access subsidised by the Government would obviously widen the potential audience. The information would also be more generally accessible if it was not listed as a "members only" service and was given more prominence on the site.

Question 2. I'm very concerned to hear that some of the state owned companies (especially in the developing countries) have only begun looking into the Y2K problem in mid 1998. This would seem to imply that they have little chance of completing remediation by December 31st of this year.

Would you say this conclusion is correct? Are there actions that the U.N. or other international organizations should be taking that could help minimize the problems these countries will face? What about action on the part of the U.S. Government?

Answer. . . . *"As a general rule, the state oil companies, especially those in developing countries, probably lag the majors in addressing the problem. However, the largest state oil companies which represent the supply most important to the United States started relatively earlier and appeared to be more advanced. . ."*

This is probably true. The state of readiness by December 31st depends on many factors unique to each company. The way in which they close to tackle the issue, the resources involved, the relative vulnerability of the company's systems and the local infrastructure will all contribute to the outcome. Offers of technical help and information sharing are key to resolving the issue within the timeframe. A practical offer of hands-on technical assistance/consultancy advise would be more effective. In the limited time available direct assistance by their key customers is preferable to financial assistance which has little chance of filtering through bureaucracies in time.

Question 3. I believe that you are quite correct in your statement that much can be learned about contingency plan credibility through simulations, drills, and exercises. It is unfortunate that more organizations than the major international oil companies are doing this.

Can you suggest actions that can be taken by Governmental and industry organizations that would improve this situation quickly?

Answer. . . . *"no relevant quote from Ambassador Ramsay is evident in the copy of the testimony received for review . . ."*

Companies are in many ways constrained by anti-trust concerns and see considerable risk of liability which causes their lawyers to recommend caution on public statements or on collaboration with others who might be party to a liability case at a later moment. If the Government wants to expedite remediation it must take rapid and positive action. Companies should not only be offered protection in law when sharing Y2K data, they should be encouraged to share it. (The API has recently made available a model for contingency planning in the oil industry).

Question 4. The test of the IEA emergency response mechanism, "with the participation of a number of oil companies", to simulate a response to Y2K-related disruptions sounds intriguing. This is the first time that the committee has heard of this exercise.

Would you please provide more detail on what the response mechanism is and how it will operate? When will this test occur? How open and public will it be?

Answer. The exercise, planned for late September will involve major oil companies as well as energy security experts from the IEA's 24 Member governments. One element of the exercise will address the potential impact on world oil supply of computer problems in the first days and weeks of the year 2000—now widely known as the Y2K problem.

The IEA, founded in the aftermath of the 1973–74 oil shock, is dedicated to maintaining worldwide security of energy supplies. To this end, the Agency maintains a wide range of response measures, including emergency oil stocks, sharing of oil among members and programmers to restrain demand.

Over the past few months, the IEA has held seminars on Y2K in Caracas, Singapore, and Abu Dhabi. In these seminars oil producers, the energy industry, and Y2K experts have shared information and discussed preparations for the millennium rollover. A fourth such seminar will be held in Moscow in July. The Y2K element in September's simulation exercise will reflect lessons learned in these seminars.

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

PDV AMERICA, INC.
750 Lexington Avenue
New York, New York 10022

April 20, 1999

Mr. Red Caveney
President and Chief Executive Officer
American Petroleum Institute
1220 L Street, N.W., Suite 900
Washington, D.C. 20005

Dear Mr. Caveney:

On behalf of Petroleos de Venezuela, S.A. (PDVSA), the Venezuelan national oil company, which is an international member of the American Petroleum Institute, I would like to confirm that PDVSA has a corporation-wide program to assure that all of our computer applications and embedded systems will function correctly when the calendar turns to January 1, 2000, and thereafter. This effort, which began several years ago, is being undertaken at a cost of upwards of $250 million. It has been declared the top priority of the company and is proceeding at an accelerated pace, with mid-1999 as the target date for completion of the identification, remediation, and testing of all our mission–critical systems. Importantly, we are on schedule in this endeavor.

Our program covers, in a systematic fashion, the development of a complete and accurate inventory throughout our system – and the necessary remediation, replacement, or elimination – of computer applications and hardware, components, equipment, and installations that could be subject to year-2000 failures. This procedure is then followed be exhaustive individual and integral tests, after which the application or component is brought back into operation and monitored for effectiveness. I have attached PDVSA's most recent report on the Y2K issue that sets forth this process that you should find of interest.

As a result of these efforts, there will be no disruptions in any of PDVSA's operations. Our capabilities in no way will be curtailed or diminished and the marketing of our crude oil and refined petroleum products – to the United States and throughout the world – will continue normally, without interruption. Any reports to the contrary are simply wrong; they are either based on far outdated information or are not based on the facts.

PDVSA is proud that Venezuela has continuously supplied the United States with oil for more than 70 years and that PDVSA is among the largest foreign suppliers of crude oil and petroleum products to the United States. PDVSA has been able to achieve its rank as the world's second largest oil company because of our commitment to the highest standards possible. We are holding ourselves to no less a standard as we address, and effectively deal with, the Y2K issue.

Please do not hesitate to use the information provided by this letter and attachment, in any way you see fit, as a means of clarifying the situation regarding PDVSA's Y2K compliance efforts and its readiness for the year 2000. If you or anyone, who may ask, would like further information on this matter, please let me know and I would be glad to provide you with the answers or put you in contact with the appropriate PDVSA official who would be able to provide whatever information is necessary.

Sincerely,

Luis Urdaneta
President, PDV America, Inc.

Attachment

PDVSA Y2K
Strategy and Actions
Summary

PDVSA Y2K Program

Introduction

Recognizing the nature, scope and potential impact of the so-called "Y2K Problem", PDVSA has established a Corporation wide Year 2000 Program (Y2K Program). The Program has been identified and declared as the top priority issue in the Corporation. Its objective is to take every possible measure and provision in addressing the issue of computer programs and embedded computer chips that may be unable to correctly function with the Year 2000.

The Program is proceeding at an accelerated pace having mid 1999 as the target date for completing the identification, remediation and testing of PDVSA's mission critical systems.

In addition, PDVSA is replacing major applications within its information systems by implementing SAP/R3 (SAP). It is well known that SAP is Y2K compliant and is an appropriate solution to the Year 2000 issue related to the systems on which SAP is implemented. The SAP Financial and Materials Management modules were brought into production on August 1998 in the Refining and Trading Business Unit, and were implemented in both the Exploration & Production and Services Divisions in January 1999. Additional SAP modules, such as Human Resources and Plant Maintenance, will be implemented in 1999. SAP implementation is progressing on schedule and on budget as of February 28,1999.

Other business software systems will be replaced, discarded, or made Year 2000 compliant through the Y2K Program.

Program Organization

A high level Corporate Program Management Team (CPMT) is in charge of the overall coordination of the Program, reporting to the PDVSA's Information Technology Committee acting as Y2K Steering Committee, and PDVSA's Board of Directors. Additionally, qualified managers are appointed in each of PDVSA's Divisions and Independent Affiliates for the coordination of the efforts within their particular areas of activity under the instructions and guidelines from CPMT. Further, Y2K Project Managers are in charge of the execution of the Y2K activities in each Business Unit, region or relevant operating facility. Coordinating links has also been established among CPMT and the different PDVSA ´s Foreign Affiliates and/or Joint Ventures, including those where PDVSA is not the operator, for follow-up, exchange of experiences, detect issues and areas of attention, and promote common approaches, methodologies and timelines to solve the Y2K problem.

Methodology

A methodology has been selected covering the areas of: Evaluation and Diagnosis, Detailed Analysis, Remediation, Testing, and Implementation, including Management and Project Control and the deployment of an Awareness Campaign.

In general terms, Management and Project Control covers consistent application of the methodology across the Corporation, cost / schedule management, administration of special measures when and as needed, risk management and contingency planning approach, and overall projects coordination and follow-up.

The Awareness Plan has PDVSA's employees, logistic chain entities and other relevant institutions as main target. Its objective is to energize people and organizations to action providing a framework for decision making by disseminating the nature of the problem, scope, potential impact, sense of urgency, and the methodology and general guidelines to be applied.

The core activities, from Evaluation to Implementation, covers in a systematic manner, the development of complete and accurate inventory of computer applications and hardware, systems, components, equipment and installations. The inventory goes from refineries to elevators; from power grids to medical equipment; from tankers fleet to air conditioning units. Detailed analysis are conducted, including date sensitiveness, interfaces, risk assessment, and impact on safety, security, assets integrity, environment, and PDVSA´s businesses and operations, to identify and set priorities and action plans. Remediation, replacement or elimination of the particular application or component is executed, followed by exhaustive individual and integral tests when applicable and feasible. Finally, the application or component is brought back into the production environment with a close follow-up, including measures to avoid post-remediation and testing contamination.

Description and Progress

The Program is divided into five major areas of activity: Information Systems (I.S.) and associated infrastructure, Industrial Automation, Telecommunications, General Systems (non - I.S. business infrastructure), and Internal and External Relations (Logistic Chain and other institutions).

Areas of Activity

Information Systems PDVSA is replacing the core of its administrative applications (finance, materials management, human resources and plant maintenance) by implementing SAP / R3, which is year 2000 compliant. The year 2000 issue relating to PDVSA's other business software is addressed through the Year 2000 Program. The major portion of these business applications are executed in conjunction with PDVSA's technological partner INTesa (a strategic joint venture between Science Applications International Corporation ("SAIC") and PDVSA). The remaining applications are executed by Geoquest, a Schlumberger's Division, as an outsourcing company

responsible for the administration of E&P applications of technical nature, most of them developed by third parties.

The inventory phase is completed. Data center, Wide Area Networks (WAN) and Local Area Networks (LAN) are ready. The remediation or testing of approximately 25 million lines of code is in progress by INTesa. Servers and PC ´s, not Y2K compliant, are being replaced or upgraded. Remediation of applications is based on extensive use of "remediation factories". Testing of applications and infrastructure is being executed concurrently with other project phases. Remediation of critical computer infrastructure is scheduled to be completed by the end of 1Q99. Mission critical applications will follow having mid 99 as the target.

The ***Industrial Automation systems*** are executed by PDVSA's specialists supported by vendors' and manufacturers' authorized specialists and representatives. The scope of the program in Industrial Automation includes the required actions to pursue the identification, remediation or replacement, and testing of all automation systems and equipment supporting PDVSA's systems and processes. All mission critical systems are targeted to be Y2K ready by mid-1999.

The inventory assessment is completed. As part of the inventory phase, communications are sent to key suppliers, in order to obtain information about their Y2K policy and/or the compliance status of their products. A high percentage of the responses have been received.

In addition to inventory, tests and remediation activities, the review and adaptation of the Corporation's contingency plans are developed in order to minimize the possibility of core business activities interruptions due to the Y2K effect.

The ***Telecommunication system*** is also executed through a joint effort between PDVSA and vendors and equipment manufacturer's specialists. The methodology covers a phase of diagnosis, an action plan and the implementation phase, including extensive and exhaustive tests.

The inventory phase is completed and a reduced number of critical components require remediation or replacement. It is estimated that the critical elements will be ready by May of 1999.

In relation to third parties, including service and equipment providers, letters requesting information on Y2K compliance were sent and all the answers received.

General Systems The non-information systems infrastructure, including health and medical equipment, air transportation, buildings and facilities general support equipment, security, among others, are being executed at business unit level, supported by corporate functional managers to assure integration and compliance of specific corporate-wide policies applicable and enforced for such functions. The inventory phase is completed. A very small number of items has been identified for remediation and those certified by vendors as compliant are being tested. All critical items corresponding to General Systems are targeted to be fully compliant by mid 99.

Internal and External Relations PDVSA is very active in executing an awareness campaign, addressing both internal personnel and the logistic chain of the Corporation, as well as some other key entities and organizations within Venezuela. Among the key activities: presentations to the personnel both, at headquarters and operational areas; participation, promotion and/or sponsorship of national and international Y2K seminars and forums; development of internet and intranet web pages; publication of articles, both in internal and external press media; active participation in governmental and corporate committees formed to minimize the impact of the year 2000 problem in the domestic economy.

Costs

The estimated total cost of the PDVSA's Year 2000 Program is US$ 250 million (excluding SAP) and does not include PDVSA ´s potential share of costs that may be incurred as a result of the Year 2000 issue by partnerships and joint ventures in which the company participates but is not the operator.

Business relations

PDVSA's business relations are centered on communications with business partners across the logistic chain. PDVSA has been working with and continue to work with customers and suppliers to assure continuity of purchases, sales and inter-company communications, such as Electronic Data Interchange transfers.

PDVSA now requires that all new contracts include clauses addressing the Year 2000 issue, and is also seeking evidence of action taken by suppliers to address the Year 2000 issue, prior to procuring new services.

While PDVSA is assessing the readiness of suppliers and customers to address the Year 2000 issue, there can be no guarantee that third parties of significant importance for PDVSA will successfully and timely reprogram, replace, or test all of their respective computer hardware, software and process control systems. Review of third party readiness to address the Year 2000 issue will be a continuous effort by PDVSA that will go beyond PDVSA's Year 2000 Program's target dates.

PREPARED STATEMENT OF KEN GUNN

My name is Ken Gunn, President of Caliber Consulting. I was asked to provide a statement for the record on the Y2K activities and preparedness of the petroleum industry at the wholesale level of distribution. Before proceeding, I will briefly discuss my background and qualifications in addition to a summary of Y2K activities I have been involved in with the petroleum industry.

Prior to starting my own consulting business, I was employed by Chevron Products Company in their marketing organization. I started work in their company owned and operated service stations. During the 14 years I worked with Chevron Products Co., I moved through numerous assignments. In my last assignment as a wholesale coordinator I was responsible for the wholesale distributors, also commonly referred to as jobbers, for the geographic area of El Paso west through Southern California. The oversight covered contracts, marketing programs, product integrity and supply issues.

My Y2K activities over the last 18 months have been directed towards supporting various petroleum and convenience store state associations in educating their membership on Y2K. I have done seminars and workshops for these associations in over 30 states. In addition to state association, I have provided support to the National Association of Convenience Stores, the Society of Independent Gasoline Marketers of America, the Oil Price Information Service and Conoco. The comments I will provide in this statement are based on my "hands-on" observations and discussions with wholesale distributors around the country.

As industry background information, wholesale distributors are independent companies that typically have contracts with one or more supplier/refiner companies. In

many cases they also have authority by contract to use the supplier/refiners trademark in the marketing of fuel products. Many convenience stores and service stations in the country receive fuel through wholesale distributors.

The wholesale distributors market over 50% of gasoline, more than 60% of diesel fuel and more than 90% of fuel oil sold in the United States. Clearly, they are a key component to the effective distribution of petroleum refined products in this country.

During my sessions with distributors, I inquire of their Y2K status by asking whether someone in the company is assigned to Y2K, if they have a written plan, and if they have spent any money. Rarely do I get a response with more than 50% of the distributors indicating they have assigned someone to Y2K. There are even fewer responses indicating there is a written plan or that money has been spent.

The lack of spending money is probably the most telling. Companies I have done on site Y2K engagements with generally have budgets ranging from $100,000 to $500,000 and networks of convenience stores ranging in numbers from 10 to 50. The dollars spent have been for company office business systems and store upgrades, such as software for point of sale terminals and the card readers at the pump islands.

There are a number of reasons why Y2K activity is not at a higher level for wholesalers. The December 22, 1998 tank upgrade deadline had considerable resources applied to it last year for many wholesalers. Wholesalers are tending to wait before spending resources on Y2K because of the continued merger activity within the industry. In addition to mergers at the refiner level, considerable acquisition activity is happening at the wholesale level. Finally, I have had a limited number of people indicate they foresee Y2K as nothing but smoke and mirrors. They intend to wait until January to see what needs to be fixed.

In general, some of my concerns and issues are as follows:

1. I believe there will be some business disruptions at some wholesaler offices which will cause problems in day to day business activities. For example, during one on-site engagement, a wholesaler asked the vendor who sold them their computing system, software and hardware, if the system was Y2K compliant. They received a verbal response that it was. During our work with them, we asked the vendor specific Y2K questions regarding the system and discovered that the hardware, operating system and some software applications were not compliant. The fix cost approximately $20,000 and took six weeks to get scheduled. Asking the right questions about compliancy is critical, along with time allowed to remediate.

2. Assuming the scenario above occurs, in January you may find a lack of resources to handle the problems encountered in the marketplace. It is imperative that companies have contingency plans developed in order to deal with the unexpected. At this time few wholesalers have contingency plans in place.

3. Concerning convenience stores, problems could occur with Point of Sale terminals. This problem can be alleviated by switching to a manual mode of operation. The key is being prepared to switch if needed. Gasoline dispensers should not experience Y2K problems.

4. For the wholesalers of diesel fuel to commercial accounts, truck stops, etc., the Y2K exposure is at the customer level. If a manufacturing company has problems with embedded chips in their machinery and ceases to operate for a few days or weeks, the wholesaler will feel a financial impact. Particularly if the customer is a large account or if multiple customers have difficulties.

In discussions with a financial lender about loan portfolios and the cause for a loan to have a missed payment, we received this comment. When the lender did a root cause analysis as to why a loan payment was missed or delayed, often it was due to the borrower having disruption of business of only one day.

5. I have had numerous wholesalers indicate that commercial customers, particularly hospitals and in one case a utility company, have requested that a tanker(s) of diesel fuel be dedicated for their needs during the transition to the new year. The use would be for back-up generators or fuel to keep their trucks on the road.

My concern is the strain this would put on the distribution system because of the limited number of available trucks. Trucks assigned to one account cannot service other customers. Lastly, I am concerned about whether enough fuel will be in inventory at a product terminal to handle a spike in demand the last couple of days of December.

6. While the issue of commercial accounts storing additional diesel is of concern, a far greater exposure exists from the general public. People may want to fill their gas tanks the last couple days of December. If this were to happen in mass, the amount of available gasoline in a market would dry-up in a short period of time. Recovering from this situation would take time because some markets are consider-

able distances from product terminals/refineries. Another potential problem can be caused by having to prioritize customers or market areas for re-supply.

The big challenge, for supplier/refiners and wholesalers of whether to have increased levels of fuel inventories on hand in December for the potential spike in demand, is from a cost basis and acquiring additional fuel. The current fuel distribution network in the country operates in a just-in-time mode. To work on increasing inventories at terminals and convenience stores will require planning starting as early as September.

7. In addition to spikes in demand during December, the price of fuel is also in question. Past experience, such as refinery fires causing drops in fuel inventories, indicates that prices will rise.

I advise my audiences that I feel Y2K is a business problem. While spot outages of power, etc., may happen, it should be limited. However, a misinformed consumer can make Y2K a personnel problem if they overreact and hoard fuel, money and food in a short period of time. I am concerned that the media reporting on Y2K has too often been on the extreme side on the issue. I see a lack of investigative work done to clarify what is being said by individuals interviewed.

In closing, I offer these comments:

- A proactive outreach to the consumer, clarifying what Y2K is and what it is not, is critical to minimize the potential scenarios described above. Credible spokespersons must be educated on the topic and actively work to get the accurate information out.
- I believe there should be media outreach that better educates people on Y2K issues.
- I anticipate business disruptions with wholesalers may cause some to incur financial losses, and in some cases to go out of business. The nature of the market is that a competitor will see this as an opportunity and fill the void.
- It must be recognized that some far right groups will use lack of information or fear to their advantage. For example, I attended a community meeting on Y2K here in Bozeman, Montana. The meeting was organized by a neighborhood group to start raising people's awareness on Y2K. More than 200 people attended. During the Q & A portion of the meeting, a gentleman stood waving a manila envelope and stated; "I have enclosed in this envelope copies of secret legislation from Washington, D.C. that martial law will be imposed January 1, 2000."

As crazy as it sounds, I observed that people were paying attention and several clapped.

On that note, I appreciate this opportunity to offer my thoughts and information on Y2K for the petroleum industry at the wholesale business level. If anyone has any questions, I can be contacted at 1–800–811–4866 or *caliber1mt@aol.com*.